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Sybase set to overhaul its Replication Server

BY BARB COLE

Emeryville, Calif.

Sybase, Inc. is readying two new releases of its database replication software that will offer improved performance, allow users to manage replication centrally and provide direct support for multiple vendors' databases.

The enhancements come amidst growing competition from companies such as IBM, which last month announced plans to support replication across IBM, Oracle Corp. and Sybase databases. Sybase has also been pressured to upgrade its product by users, many of whom have complained that Replication Server is too difficult to set up and needs better security.

Replication Server, which began shipping in May, is designed to keep distributed databases synchronized by copying transactions to databases across an enterprise.

In an upgrade dubbed 10.1 and scheduled for a first-quarter 1995 release, Sybase will crank up performance on multigigabyte database replication, improve security and add support for SQL Server System 10 data types, said Terilyn Palanca, director of product management at Sybase.

Other enhancements planned for the first quarter of 1995 include links to the company's MDI DB2 gateway that will let users replicate DB2 data into Sybase databases. Palanca said the company plans to offer replication across other databases, as well, including those from Oracle and Informix Software, Inc., but she declined to say when those hooks would be ready.

See **Sybase**, *page 111*

Replication Server revisions

Speed up replication of large databases with read-ahead technology and improved caching.

Let users replicate SQL Server databases to others, including Oracle7 and DB2.

Link Enterprise Replication Server Manager to Enterprise SQL Server Manager tools.

DISTRIBUTED COMPUTING

Hotel chain rests easier with new data analysis system

BY KEVIN FOGARTY

Atlanta

Holiday Inn Worldwide is in the midst of a $61 million global distributed computing project designed to win more franchisees and put more heads on its beds.

The project centers around an internally developed Unix-based analysis tool, dubbed the Holiday Inn Reservation Optimizer (HIRO). By continually analyzing data fed to it from the company's central Holidex reservation system, HIRO can closely predict the occupancy of a particular hotel on a given day and the relative daily worth of each room.

Armed with that data, hotel managers are better equipped to decide when to offer discounts and when to hold out for premium rate-paying customers, said Don Lynch, director of worldwide hotel systems development for Holiday

See **Reservations**, *page 110*

Holiday Inn

Worldwide Hotel System

Cost

$61 million over 6 years.

Payback

Immediate revenue increase of 3% to 5%; system could help sell 1,200 more hotel franchises by 1999.

Rollout

Installed in 1,250 U.S. hotels; will be installed in 150 more in the U.S. by April and 450 internationally by early 1996.

Jury's out on PowerPC's net role

BY MARGARET DORNBUSCH
AND PEGGY WATT

New York

Don't look to the PowerPC to revolutionize network computing overnight, but the common hardware platform promised last week by IBM, Apple Computer, Inc. and Motorola, Inc. will offer some long-term open computing opportunities.

The firms pledged to design a common hardware reference, a blueprint for systems based on a common chip family, with consistent hardware features and the ability to natively run multiple operating systems.

The so-called PowerPC Alliance has been jointly developing PowerPC chips – four so far – since 1991, but each of the vendors has used the Reduced Instruction Set Computing CPU in a different hardware design and with different system software.

For example, Apple's PowerMac, the only PowerPC-based system shipping, runs the Macintosh operating system and accommodates Windows only through a software utility that is available exclusively for Macintosh systems.

All of the first-generation PowerPC-based

See **PowerPC**, *page 111*

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NET MANAGEMENT SHAKE-UP

IBM, Novell scoping out integration plan

NetView for AIX bridged to NMS.

BY KEVIN FOGARTY

Santa Clara, Calif.

IBM and Novell, Inc. this week will jointly announce technology that enables users of IBM's NetView for AIX network management system to map, monitor and manage NetWare LANs across the enterprise.

At the Enterprise Management Summit here, the companies will release add-ons to NetView for AIX and Novell's NetWare Management System (NMS) that allow users of the IBM platform to obtain detailed graphical views of internetworked LANs, cull event information from NetWare systems and store topology data in a NetView database. They will include a remote console capability that lets NetView managers reconfigure NetWare networks through NMS.

NetView for AIX operators will receive NMS alerts and be able to drill down on NetWare nodes to diagnose problems.

The enhancements include integration of Novell's LANAlyzer network analyzer with IBM's Rmonitor for AIX, making data on NetWare traffic available on NetView consoles.

The new features provide an unprecedented level of integration between NMS and a third-party man-

See **Integration**, *page 110*

MANAGEMENT MEDLEY

Net management tops the news as IBM and Novell are set to announce software that lets NetView for AIX store NetWare topology data and exchange information with NMS. Separately, SunSoft is readying Solstice, a blueprint for integrated net and systems management (see below), while Sprint is prepping a management tool to lure users to its ATM service (page 5).

Sun's mgmt. future turns on Solstice

BY JIM DUFFY

Mountain View, Calif.

SunSoft, Inc. will soon unveil a framework for integrated network and systems management that will allow users to run the same applications across the company's disparate management platforms and share a common data repository.

The framework, referred to as Solstice by sources familiar with its development, allows SunSoft's SunNet Manager departmental network manager and the forthcoming Project Encompass distributed enterprise management platform to run systems management applications from SunSoft's Solaris group along with net management tools.

It also supports SunSoft's Cooperative Consoles database replication software, letting the platforms and applications share management data.

Solstice is SunSoft's answer to distributed, object-oriented integrated network and systems management initiatives announced by rivals IBM and Hewlett-Packard Co.

The framework will support the Simple Network Management Protocol, the Common Management Information Protocol, SunSoft's Open Network Computing remote procedure calls and, later, object request brokers (ORB) for manager-to-agent and manager-to-manager interaction, said Brian Biles, manager of business development for SunSoft.

Cooperative Consoles will let SunNet Manager and Encompass platforms share management information from a distributed data repository. It can fill the role of the object data model and ORB until Version 2.0 of the Common Object Request Broker Architecture (CORBA) is complete, Biles said.

Solstice is one result of the consolidation of SunSoft's network and systems management activities, which were separate until about one and a

See **Solstice**, *page 15*

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Briefs

Sniffing out trends. Network General Corp. today will announce a strategic partnership with Optimal Networks, a network management software company in Mountain View, Calif., under which the companies will develop software for managing networks proactively.

Using data collected by Network General's Expert Sniffer and Distributed Sniffer System, the new software will perform in-depth analysis and event simulation. The software is expected to hit the market in the first half of 1995.

Secure ATM. The Defense Department has awarded a four-year, $25 million contract called Fastlane to GTE Government Systems Corp. to develop products for making Asynchronous Transfer Mode networks more secure. The products will consist of a local authority workstation, an audit manager, a permission server and a rekey manager.

High-fibre switch. Hewlett-Packard Co. last week unveiled a Fibre Channel switch for OEM resellers that connects computers and peripherals to gigabit-speed networks. The modular HP OpenSwitch Series I supports 16 full-duplex ports at 266M bit/sec per port. It is designed to handle speeds of 1G bit/sec through an upgrade available in mid-1995. OpenSwitch Series I supports circuit switching, frame switching and a class-of-service feature that allows users to intersperse frames between circuit-switched traffic when bandwidth is available.

OpenSwitch Series I will ship in the first quarter of 1995. Pricing is based on an annual dollar volume commitment.

Extending Notes. Eicon Technology Corp. of Montreal this week will announce an X.25 gateway for Lotus Development Corp. Notes. The gateway relies on Eicon's X.25 EiconCard and its OSI Gateway for OS/2 to provide access to Notes over a WAN. Pricing starts at $1,095 for the card and $795 for the software license.

Eicon: (514) 631-2592.

MFS snaps up Cylix. Competitive access provider MFS Communications Company, Inc. in Omaha, Neb., last week announced plans to buy Cylix Communications Corp. for $8.5 million from FCR, a Groupe France Telecom company. Cylix, which specializes in Application System/400-to-Systems Network Architecture connectivity services, will become part of MFS Datanet, Inc. in San Jose, Calif.

Tune me in. RadioLan, Inc., a start-up formed by SynOptics Communications, Inc. charter member Mike Clair and longtime Cisco Systems, Inc. hand Terry Eger, will begin selling a wireless LAN connectivity product early next year. The company's adapter cards will plug into workstations and Ethernet hubs and routers, and will give users the flexibility of on-site wireless LAN connectivity at the same speed as hard-wired Ethernet, according to Dataquest, Inc. analyst Tam Dell'oro.

South of the border. AT&T last week announced a $1 billion alliance with industrial conglomerate Grupo Industrial Alfa S.A. for providing long-distance telephone service in Mexico when the country's telephone monopoly ends in 1997.

AOL gets into the Internet. America Online, Inc. last week said it will spend $30 million to buy BookLink Technologies, Inc. of Wilmington, Mass., and make BookLink's impending World-Wide Web (WWW) browser the heart of a new Internet services division. BookLink's InternetWorks, due for release by December, features Object Linking and Embedding 2.0 support and multiple WWW threading.

Naughty nets. After protests from students and Internet users around the world, Carnegie Mellon University last week changed plans to drop a series of sex-related Usenet conferences from the campus feed. Officials said they were worried that the groups could violate a Pennsylvania law against distribution of sexually explicit material to minors but agreed to continue campus access to conferences such as alt.sex, where the subject is discussed. The jury's still out on conferences carrying explicit images. A university task force was set up to study the issue further.

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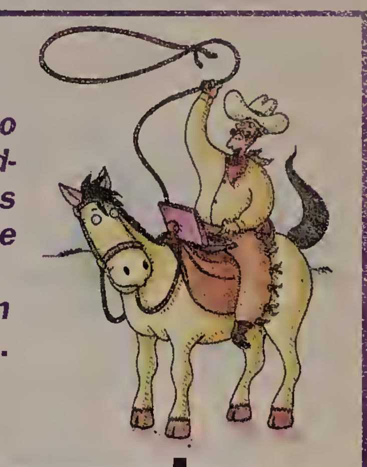

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Network HELP *desk*

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I am looking for information about accessing the Usenet newsgroups on the Internet. What are some of the newsgroup reader programs, and how do I get them? Also, how do I get a list of all the newsgroups that are available on Usenet?

Daniel Light, Windsor Locks, Conn.

Adam Gaffin, a senior writer at *NW* and author of *Everybody's Guide to the Internet* (MIT Press), replies:

If you want to access Usenet via a dial-up account with an Internet provider such as The World in Brookline, Mass., or Portal Information Network in Cupertino, Calif., you can use the news readers that are already installed on these providers' systems. Tin is a particularly easy-to-use, but powerful, news reader. To use it, type "tin" at your command prompt.

If you are connecting to a Usenet (or Network News Transport Protocol) server via TCP/IP, Serial Line Internet Protocol (SLIP) or PPP, you'll need to get news reader software. Several vendors now sell TCP/IP-based news readers. For example, NetManage, Inc.'s Chameleon includes a Windows-based news reader. For more information, call NetManage at (408) 973-7171.

If you have access to Gopher on the Internet, you can also download a copy of Trumpet, a shareware news reader for Windows. Use Gopher to connect to darkstar.ucsc.edu. From the main menu, make the following choices: PC, UCSC public ftp server for PCs and Wintrump.

NewsWatcher is a similar program for Macintosh platforms. It's available via anonymous FTP at ftp.uu.net in the /systems/mac/info-mac/comm/tcp directory as news-watcher-20b14.hqx.

There are now more than 10,000 newsgroups available on Usenet, including ones in Russian and Japanese that require special software to read. Which ones you have access to depends on the policies of the firm running the server you connect to.

If you are dialing in to a public-accessInternet provider, you will be able to get a listing of every

See Help desk, *page 87*

NSC unveils next-generation router/ATM campus switch

BY MICHAEL CSENGER

Washington, D.C.

Network Systems Corp. (NSC) last week introduced a hybrid router/ATM campus switch combining the best of both worlds to provide enhanced performance while easing network configuration and management.

The Enterprise Routing Switch (ERS) is built on a 1.5G bit/sec Asynchronous Transfer Mode switching fabric that ties together as many as 16 slots for user interface modules. Each LAN module has its own on-board application-specific integrated circuit-based router that handles all traditional routing functions while passing traffic on to the cell-based backplane for faster throughput.

Of the switch's 16 slots, 14 are available for user interface modules. These can hold as many as 128 V.35 ports, 84 Ethernet ports or 42 OC-3 ATM ports. A five-slot version is also available.

Users can deploy the ERS as a high-performance backbone router, with a throughput of 500,000 packet/sec and upgrade individual modules for pure ATM switching as needed. ATM-attached devices can interwork seamlessly with traditional LAN-attached devices as the ERS shuttles different traffic types across one common backplane, perform-

See NSC, *page 110*

MOBILE COMPUTING

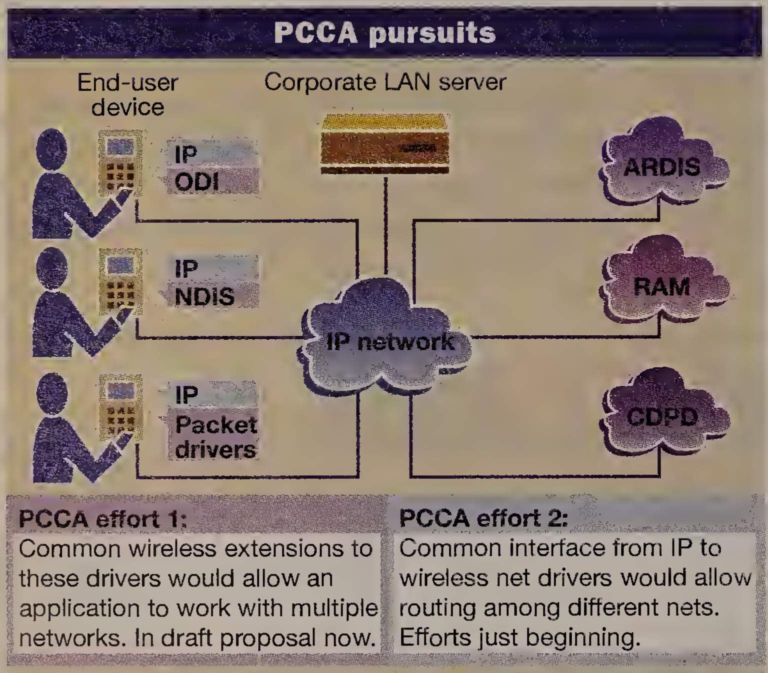
Wireless rivals team to ease interoperability

BY JOANIE WEXLER

As user worries escalate about the emergence of multiple incompatible wireless networks, industry rivals are quietly working together to overcome application portability and interoperability obstacles.

ARDIS Co., Ericsson GE — which makes modems for the RAM Mobile Data network — and Cellular Digital Packet Data (CDPD) champion McCaw Cellular Communications, Inc. are leading efforts at the Personal Computer and Communications Association (PCCA) to write common wireless interfaces.

PCCA pursuits



PCCA effort 1: Common wireless extensions to these drivers would allow an application to work with multiple networks. In draft proposal now.

PCCA effort 2: Common interface from IP to wireless net drivers would allow routing among different nets. Efforts just beginning.

GRAPHIC BY TERRI MITCHELL

Their efforts will eventually allow the portability of applications among wireless nets running different protocols. "Today, applications are so tied to the network, users must choose one piece of hardware with one supported protocol," said Bill Frezza, PCCA chairman.

The group's work will also allow messages and data to be routed among the various networks, said Rod Hilton, manager of connectivity at ARDIS and chairman of the Architecture Committee at the PCCA.

Routing among different networks is today possible through services such as those from RadioMail Corp.; however, the company had to write a version of its messaging application for each of the networks it supports.

Similarly, some wireless user pioneers, such as ADP Automotive Claims Services in San Ramon, Calif., have developed their own applications with separate hooks to the ARDIS, RAM, CDPD and data-over-cellular protocols.

To alleviate such development headaches, the PCCA's recently formed Architecture Committee is charged with developing standard interfaces at various communications layers. First, the group is defining extensions to low-level adapter drivers, such as Microsoft Corp.'s Network Driver Interface Specification, Novell, Inc.'s Open Datalink Interface and Crynwyr Software's packet TCP/IP drivers for DOS.

The specifications for these extensions will likely go out to members for a vote within three months, Hilton said.

A common set of wireless driver extensions would allow transport stacks within the various protocols — such as the TCP/IP stack used by CDPD — to access any packet modem by untying the software from the hardware, Frezza said.

"Ultimately, what we're shooting for is application portability across networks and end devices," said Hilton. But he said users will need multiple modems, such as separate PCMCIA modems, for each net.

Eventually, the new PCMCIA 32-bit standard, called PC Card, could let multiple chip-size modems reside on one card (*NW*, Nov. 7, page 31), though this will be a technical challenge, analysts said.

INTERFACES STILL NEEDED

The PCCA's work with driver extensions and IP-to-driver interfaces only solve part of the problem; still needed are industry-standard programming interfaces for application developers, such as WinSock over radio, said Russell Nelson, president of software driver company Crynwyr Software in Potsdam, N.Y., creator of the packet drivers for TCP/IP over DOS.

WinSock is an interface that allows Windows applications to work over varying flavors of TCP/IP. The application program interface efforts are also on the Architecture Committee's plate, Hilton said.

While many analysts argue that only one packet radio network — such as ARDIS, Mobitex-based RAM or CDPD — is necessary, others say large mobile work forces will eventually want access to all three, in part to fill coverage gaps.

In addition, "I believe people will want competitive alternatives, just as they do in the wired environment," said Roberta Wiggins, director of wireless communications at The Yankee Group.

"Sooner or later, efforts like these will lead the industry to get its act together and make it easier for users to employ general-purpose applications," said Frezza. "If I'm an MIS director looking to use wireless as just another transport that I integrate into my enterprise, I am tearing my hair out today."

HP, Lotus to partner on messaging, groupware

BY ADAM GAFFIN

Cambridge, Mass.

Hewlett-Packard Co. and Lotus Development Corp. last week formally announced plans to mesh the Lotus Communications Server (LCS), the next-generation server for Lotus Notes and cc:Mail, with HP's OpenMail and OpenView products.

The alliance will thrust HP into the groupware market, while providing Lotus with much needed management and messaging backbone technology.

For META Group analyst Mike Rothman's take on the alliance, see page 58.

The first fruits of the HP-Lotus union, which the companies have been discussing for months (*NW*, Sept. 5, page 1), will be an OpenMail module designed to let Notes users forward documents to users of other electronic mail systems.

The companies will also team to provide a Notes management system, dubbed NotesView, that will be based on HP OpenView and give administrators the ability to oversee a network of Notes servers from a single console. Currently, administrators must log on to each server separately to perform administrative tasks.

Ultimately, OpenMail's message transport and management functions will become part of LCS, officials from the two companies said. However, the initial release of LCS — due next year — will not have any OpenMail components, they said. Integration could come in 1996, but an exact delivery date has not been announced.

DECISION MAKER

The integration schedule could determine how BellSouth Telecommunications, Inc. develops its messaging backbone, said Bob Stevens, manager of E-mail services for the company.

The telecommunications firm's more than 40,000 E-mail users now rely on a variety of LAN- and host-based systems, all linked via homemade gateways. But the company is looking to OpenMail as the backbone for its next-generation messaging architecture, in

See Partner, *page 15*

What they bring to the table

Notes	OpenMail
▶ Replication	▶ Enterprise messaging backbone server
▶ Groupware object store	▶ Links to other mail systems
▶ Application development platform	▶ OpenView management platform support
	▶ X.500 directory

IBM loads another round for mainframe-to-LAN battle

BY MICHAEL COONEY

Atlanta

Concerned about encroachment by channel-attached routers, IBM last week promised to ease the linkage of LANs and mainframes by adding TCP/IP routing, support for an unlimited number of Token-Ring users and other new features to its 3172 Interconnect Controller.

Executives at last week's meeting of Guide International Corp., an IBM users group, said IBM will also announce early next year software features that enable the 3172 to provide tn3270 server functions and will unwrap a 3172 performance monitor and load balancing features for users with multiple 3172s.

What's more, IBM is exploring the idea of putting an SNA 3174 controller into the 3172 that would let the device serve as both a LAN-to-mainframe gateway and an SNA 3174 controller. That would eliminate the need for a separate controller.

The card would be similar to the one IBM now provides for its 8260 hub, Chipcom Corp.'s Online and Cabletron Systems, Inc.'s MMAC hub.

Analysts described the moves as a talon sharpening for the 3172 that will help in its fight against Cisco Systems, Inc.'s recently announced channel-attached router — a product aimed squarely at 3172 users.

The 3172 also faces some internal competition from IBM's recently announced NWays 3746 Model 900. That box, expected early next year, will let SNA users migrate to Advanced Peer-to-Peer Networks without trashing existing 3745s but will also support mainframe channel LAN attachments and routing functions.

In addition, an Open Systems Adapter that will ship with new IBM mainframes will let users link Token-Ring, Ethernet and Fiber Distributed Data Interface LANs directly to IBM's new Enterprise System/9000 mainframes without the need for a 3172 or a 3746 (*NW*, Oct. 24, page 1).

"The 3172 will continue to be a strategic box for IBM, even more so now that Cisco is trying to roll out its channel-attach technology," said Anura Guruge, an independent analyst based in New Ipswich, N.H. "The NWays 3746 and the Open System adapter on the mainframe will ultimately be competition for the 3172, but by then the 3172 will be positioned as the low-cost

See Battle, *page 111*

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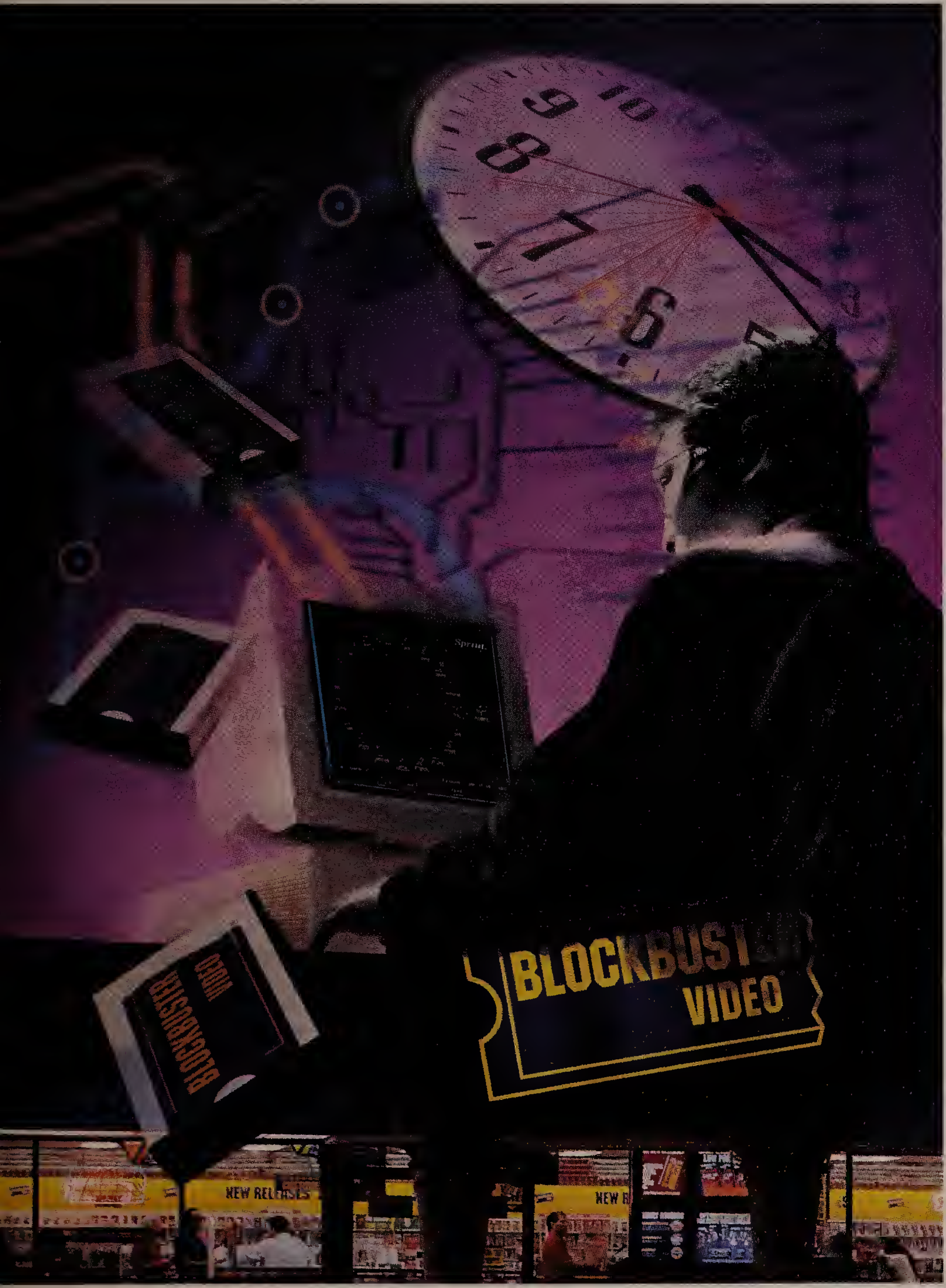

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Microsoft's Windows 95 flexes connectivity muscles

'Chicago' to succeed Windows for Workgroups.

BY PEGGY WATT

San Francisco

Network managers who previewed Microsoft Corp.'s Windows 95 last week said its communications and administrative tools are sophisticated enough to make the product a viable peer-to-peer network operating system (NOS).

Windows 95, known previously by the code name Chicago and due to ship in mid-1995, will succeed Windows for Workgroups as well as replace the combination of Windows 3.1 and DOS, according to Microsoft product managers at a Windows 95 road show here.

Microsoft Windows 95 demos for users

Nov. 21 — Toronto
Nov. 29 — Houston
Dec. 8 — Detroit
Dec. 12 — New York

For more information, call (800) 685-0951.

The operating system is not a NOS — Microsoft reserves that role for Windows NT — but Windows 95 provides a number of communications features.

For example, Windows 95 will contain protocol stacks for TCP/IP, NETBIOS Extended User Interface, IPX/SPX and Point-to-Point Protocol. This will make it easy for net administrators to hook Windows 95 workstations to nets supporting any of these protocols.

The software also will feature a Windows-to-Internet naming service, support remote dial-in capabilities and follow Microsoft's Network Driver Interface Specification, according to Steven Guggenheimer, Microsoft Windows product manager.

"Networking is such a major concern in corporations that Microsoft apparently felt it had to be able to demonstrate that Windows 95 could interact smoothly with a network," said Jan Altman, a trainer with The Express Train, a Windows consulting and training firm in Santa Clara, Calif.

Windows 95 provides a Network Neighborhood menu that shows users the list of servers, nodes and peripherals to which they have access.

Windows 95 also provides a selection of network administration tools, which may eventually be packaged separately, Microsoft product managers said. Among the tools are a Network Control panel where a net manager can define each desktop's physical configurations, such as network cards and default servers, and a System Policy Editor to define desktop interface configurations and general user access restrictions.

A NetWatcher menu displays information about which users are logged onto which physical nodes and what resources they are using. Windows 95 will also provide a Simple Network Management Protocol agent.

Network management tools can also retrieve information about the software and hardware configurations of each Windows 95 machine by reading a Windows 95 file called a Registry, which the operating system builds and maintains on each desktop. Microsoft demonstrated Windows 95 feeding information to Hewlett-Packard Co.'s OpenView Network Monitor, which could, in turn, map and graphically identify nodes for troubleshooting purposes.

For other communications functions, Windows 95 will provide an improved version of the terminal communications program in Windows, called Hyperterminal. It is also scheduled to include a built-in interface to Microsoft's planned on-line service known as Marvel.

Windows 95 will also support dial-up access, so nomadic users can connect to a LAN over phone lines via any Windows 95 or Windows NT node, Guggenheimer said.

This should make managing Windows 95 systems from remote sites easier, said Mariano del Rosario, president of MicroAnimation, a multimedia development company with offices in San Francisco and the Philippines. He manages two Windows for Workgroups installations on Novell, Inc. NetWare and Artisoft, Inc. LANtastic LANs linked by an X.25 connection across the Pacific Ocean.

Bruce Van Horn, systems coordinator for the Northern Californian Psychiatric Society in San Francisco, said he was impressed with Windows 95, as well.

"I'd heard it was a nightmare on networks, but it looks really easy to install," he said after seeing Microsoft demonstrate the process of upgrading desktop nodes from Windows 3.1 to Windows 95, and managing the process centrally from a NetWare server.

Microsoft is now shipping its second beta release to 50,000 testers. ☒

LOCAL LOOP

Time Warner taps into Manhattan phone market

BY JODI COHEN AND DAVID ROHDE

Time Warner Communications, Inc., the telephone arm of Time Warner Cable, Inc., last week announced that it will become a competitive access provider in the largest city in the U.S.

Time Warner has begun construction of a 22-mile fiber-optic ring in midtown and lower Manhattan and will soon install an advanced digital switch in preparation for offering telecommunications services to businesses. The company said it expects to begin delivering service, including switched access, by mid-1995.

"This [New York business] is going to become very important for us over the next few years, but we need a lot of regulatory relief to bring true competition to the local phone business," said Mike Luftman, vice president of corporate communications for Time Warner in Stamford, Conn.

Oddly enough, Time Warner will be competing with itself in some regard because the company recently bought an equity stake in Teleport Communications Group, one of the largest alternative access companies in New York. Teleport, owned by three other cable television companies, has signed on as Sprint Corp.'s access provider of choice in the city.

Robert Rosenberg, president of Insight Research Corp. in Livingston, N.J., said Time Warner's stake in Teleport will further confuse their relationship.

"Now what does this make of the relationship between Sprint and the cable TV companies through Teleport?" he asked. "Time Warner looks to be going its way, while [Tele-Communications, Inc.], Cox Cable Communications, Inc. and Comcast Corp. within Teleport look to be heading off in another direction."

According to Luftman, Time Warner has plans to get into the local dial-tone business in New York.

Time Warner's entrance into the local residential telephone business depends on an interconnect agreement with NYNEX Corp.

Rosenberg said making money would not be the real reason for Time Warner to get into the residential telephone business.

"If a customer has both the cable TV service and voice service through the same company, it substantially reduces the amount of churn," he said.

FILLING THE GAP

Manufacturers of telephone switching equipment are stepping up their pitches to the new CATV entrants. Northern Telecom, Inc. — which along with AT&T provides the lion's share of central office switching equipment — last week introduced a new switch that combines the functions of local and long-distance telephony.

The Digital Multiplex Switching-500 provides on one platform such exchange carrier features as Centrex and such interexchange carrier features as virtual private networks. The design of the new switch, which costs a minimum of $995,000, was offered by Northern Telecom in response to the recent requests for proposal by Cable Laboratories, Inc. for ideas on supporting cable telephony, according to Vicki Johe, Northern Telecom's assistant vice president for carrier nets.

The switch is aimed at new entrants such as Time Warner, which are not prevented by legal restrictions from offering both local and long-distance service. In fact, the CableLabs RFP was largely spearheaded by Time Warner (*NW*, Aug. 8, page 1).

The new Northern Telecom switch fills a significant gap in the company's product line. AT&T already offers a choice of exchange and interexchange features in its 5ESS central office switch, according to Mark Langner, an analyst with the TeleChoice, Inc. consultancy based in Verona, N.J. ☒

Sprint uses mgmt. tool as bait for ATM customers

BY DAVID ROHDE

Kansas City, Kan.

Sprint Corp. is looking to lure customers to its ATM services with net management tools that give users a window into the firm's own network.

The move is expected to be a follow-on to a current project within the carrier's Network Information Systems division to build a distributed, object-based management system for its own use in monitoring its public network.

The development is in response to requests from Sprint Asynchronous Transfer Mode customers, including commercial ATM users and test bed participants, said John Strand, director of technology planning and integration for Sprint's Network IS division, based here.

"They've asked for an SNMP view into Sprint's network," Strand said. "We're developing a customer interface that will allow a customer to view their network in a Sprint environment."

> **"ATM has been lagging in the area of administrator management tools."**

Such a move is essential before large numbers of users will make wholesale commitments to public ATM and other broadband services, said Daniel Briere, president of TeleChoice, Inc., a consulting firm in Verona, N.J.

"They want to see everything and use [network management tools] as a means to get confidence in these platforms," Briere said. "It will take that level of confidence if you're putting hundreds of megabits of data [per second] onto a carrier's network."

Bob Emmett, program manager at Hughes Aircraft Co. in El Segundo, Calif., and a Sprint ATM customer, agreed. "This would be a valuable service because ATM has been lagging in the area of administrator management tools," said Emmet, who noted there is still a lot of manual setup and teardown required when changing the classification of circuits.

Sprint's object-oriented management system is being built using XShell 3.0 from Expersoft Corp. in San Diego. A prototype of the system is expected to be ready for demonstration by the end of the year, according to Strand.

A key part of the project is an integrated fault management platform that will isolate elements of Sprint's emerging gigabyte network, including Synchronous Optical Network (SONET) transmission equipment and carrier ATM switches.

Any such product should integrate with popular net management products, Briere said. "I don't think it will be accepted unless it's integrated with packages like [Hewlett-Packard Co.'s] HP OpenView," he said.

But he suggested that the payoff for carriers — more customers for commercial broadband services — could be so great that they would be willing to provide carrier network views as part of the package.

"That's why a lot of these high-end network management platforms never took off, because they cost $250,000," Briere said.

Sprint's Strand also suggested that any emerging interface with carrier network management systems could lead to bandwidth-on-demand and self-provisioning by customers of circuits. Both concepts are anticipated under Sprint's recently launched Silicon Valley Test Track in California.

He cautioned, though, that such an offering is far down the road.

➡ Senior Writer Barb Cole contributed to this story.

Here's A List Of All The Companies That Can Solve All Of Your Low-End Internetworking Problems.

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UB Networks to introduce remote access routing hub

BY JIM DUFFY

Santa Clara, Calif.

UB Networks, Inc. this week will unveil an eight-port Ethernet routing hub designed to link remote office LANs to corporate backbones.

The Access/Remote hub sports a field-upgradable V.35, RS-232, X.21 or RS-449 wide-area link that runs at up to T-1/E-1 speeds, or an ISDN Basic Rate Interface.

It supports the Routing Information Protocol, Open Shortest Path First and Point-to-Point Protocol routing protocols, and X.25 and frame relay WAN protocols.

"We've got a number of small offices, field service operations and medium-sized offices in remote locations that we need to tie in more effectively," said Blair Sanders, a senior member of the technical staff at Texas Instruments, Inc. in Dallas. "Something like [Access/Remote] would definitely be of interest."

UB distinguishes its Access/Remote routing hub through its bandwidth optimization software. This software features packet and address filtering, protocol prioritization, and 4-to-1 data compression and Express Queuing, which improves response times for all applications.

Express Queuing looks at various datastreams going across the wide-area link and tries to divide the bandwidth equally among applications. For instance, Express Queuing will make sure a file transfer of very large packets would not increase adequate response times for a transaction, said Bill Sutliff, senior product manager for UB's Network Products Division.

Access/Remote can also burst data above a frame relay permanent virtual circuit's committed information rate if spare bandwidth is available on the wide-area link. It supports the frame relay Backward Explicit Congestion Notification bit for congestion control, which throttles back when congestion is detected on the link, Sutliff said.

Join the party

Access/Remote will take on Cisco Systems, Inc.'s 8- and 16-port 2505 and 2507 routing hubs and Bay Networks, Inc.'s 12-port Access Node Router Hub.

"The bandwidth optimization features all address the costs of running a wide-area connection, which is upwards of 40% of the cost of actually running a network," Sutliff said.

Access/Remote is managed through a single Simple Network Management Protocol agent and Management Information Base.

Multiple configurations can be stored in the product's flash memory so users can upgrade software without losing the original configuration file. Access/Remote also supports out-of-band management via the product's console port and a dial-up modem.

Access/Remote costs $2,795, or $3,395 with the integrated ISDN terminal adapter. It is available now.

©UB Networks: (408) 496-0111.

Microsoft goes shopping with Visa

BY JODI COHEN

Microsoft Corp. and Visa International, Inc. last week said they will jointly develop secure transaction software that will give personal computer users more confidence in electronic shopping.

The software, which will incorporate RSA Data Security, Inc.'s encryption and public-key technology, will let users of commercial network services send an encrypted credit card number to a VisaNet server where transactions will be cleared for on-line merchants.

That could spur electronic commerce by easing the concerns of potential customers who are worried about having their credit card numbers intercepted by network crackers.

Microsoft's software has both a client and server component that will be built into the buyer's home or office machines and on the merchant's Windows NT system, respectively.

The software, which will be available in 1995, will be developed initially for Windows. Pricing is not yet available. Microsoft and Visa will publish the specifications for other software vendors and card systems to implement themselves. They will also license the technology.

MasterCard International, Inc., Visa's major competitor, said the alliance validates its own efforts to promote credit card use in electronic transactions.

MARVELOUS TIMING

Microsoft's data security technology could play an important role in the company's on-line network push. Bill Gates, Microsoft's chief executive officer, is set to announce at the Comdex trade show in Las Vegas today the company's strategy for building an on-line services network code-named Marvel.

Future Windows versions will have the Marvel client built-in, allowing users easy access to the service. Pricing for Marvel has not yet been set. Z

INDUSTRY MERGER

Attachmate and DCA to form software powerhouse

BY MICHAEL COONEY

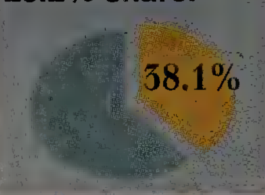
Bellevue, Wash.

Burying the hatchet, two longtime rivals — Attachmate Corp. and Digital Communications Associates, Inc. — last week agreed to a merger that will give users a superstore of communications and SNA connectivity products.

The merger will spawn a one-stop shop for a variety of desktop personal computer communications software, from 3270/5250 terminal emulation to remote LAN connectivity programs. Users will be able to buy integrated packages that provide easy connectivity to a variety of host computers and databases that today would have to be bought separately, possibly mixing and matching products from multiple vendors.

Attachmate has already started down that road with its recent Enterprise offering for IBM 3270/5250 users. Enterprise offers four products, including Extra, a 3270 emulation package; Rally for AS/400, a 5250 emulation package; Kea, a PC-to-Digital Equipment Corp. VAX connectivity program; and Link, TCP/IP software for Unix host connectivity (*NW*, Oct. 24, page 17). DCA was reportedly readying a similar package.

Attachmate/DCA will hold 38.1% of the worldwide PC-to-host connectivity market, according to International Data Corp. in Framingham, Mass. IBM is the closest competitor with a 23.2% share.



The new firm will retain the Attachmate name and will have revenues of more than $400 million this year.

Both companies support the whole range of PC operating systems including DOS, OS/2 and Macintosh, and host platforms from such firms as IBM, Hewlett-Packard Co. and Unisys Corp.

Under terms of the merger, Frank Pitt, founder of Attachmate, will become the firm's chairman and chief executive officer. James Linder, DCA's current chairman, will become president and chief operations officer.

Analysts said together the two firms will dominate the PC-to-host connectivity market. That market is expected to grow by as much as 13% per year through 1998, according to market researchers at International Data Corp. (IDC) in Framingham, Mass.

"This is the joining of the patriarchs of the IBM PC-to-host connectivity industry," said Elisabeth Rainge, an IDC PC connectivity analyst. "The jewel of this announcement is the installed base, where both firms have a strong presence and a good reputation."

Rainge said a potential problem with the merger is that Attachmate has been on a buying spree recently, picking up Datasix, a database middleware firm, and Kea Systems, a VAX terminal emulation software provider.

Attachmate used the Datasix technology to break into the database access business. The technology is now available in its Select database query and reporting tools, which give Windows and DOS users the ability to integrate data from IBM Application System/400 databases directly into their PC applications.

"After this merger, Attachmate needs to settle down and evaluate what they have and pull it all together for their users," Rainge said.

Company spokesmen declined to say if the merger would yield any new products in the near future. They also did not detail how the firm would deal with its considerable number of overlapping products.

©Attachmate: (206) 644-4010; DCA: (404) 442-4000.

Firms round out switch offerings

BY JODI COHEN AND JIM DUFFY

PRODUCT
LAN SWITCHING
ROUNDUP

Bay Networks, Inc., formed from the merger of SynOptics Communications, Inc. and Wellfleet Communications, Inc., last week announced Ethernet switching and management modules for the SynOptics 5000 intelligent hub that will allow customers to implement per-port configuration switching.

Bay also said last week it will enhance the Data Link Switching (DLSw) software for its routers to let users transmit Systems Network Architecture data over frame relay nets directly to a front-end processor (FEP).

A separate Ethernet switching announcement was made as well last week by Kalpana, Inc., which Bay rival Cisco Systems, Inc. recently aired plans to buy.

For Bay, providing configuration switching will let its customers logically distribute net users and resources to different net segments, providing users with the bandwidth they need while improving overall performance.

The modules support as many as 52 Ethernet segments, 26 token rings and five Fiber Distributed Data Interface links. The modules, available now, start at $4,595.

The DLSw enhancement allows Synchronous Data Link Control or LAN-attached SNA devices at remote sites to communicate over public or private frame relay networks directly to IBM 3745 or 3746 FEPs. The software complies with RFC 1490 for carrying SNA natively over frame relay nets.

This capability obviates the need to upgrade 3174 cluster controllers with frame relay interfaces. Cisco announced a similar product last week (see story, page 25).

Bay will ship this new software in Release 8.10 of its router operating system in the first quarter of 1995.

KALPANA ADDITION

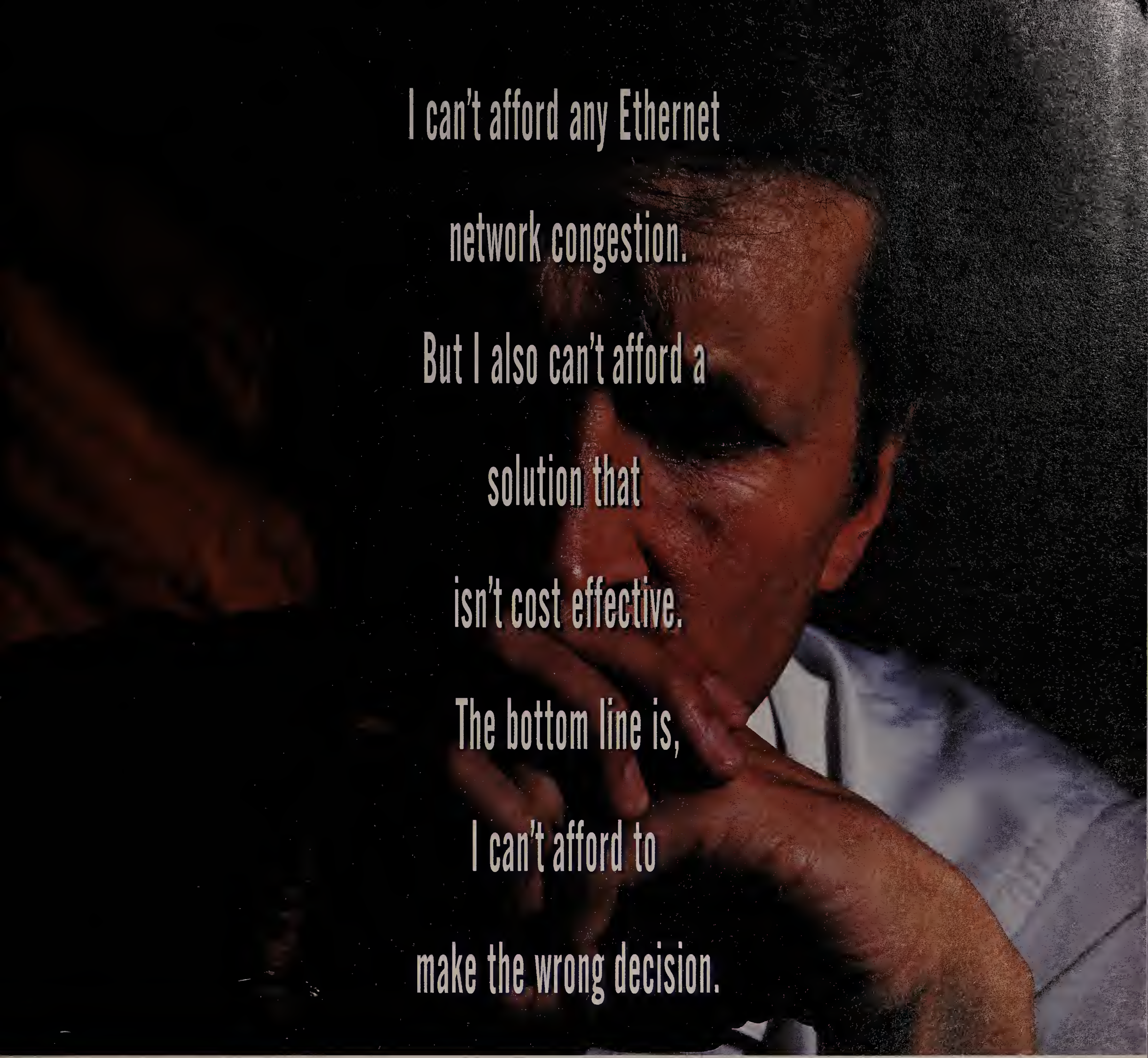
Kalpana last week introduced the latest addition to its Ethernet switch family. The EtherSwitch EPS-2115M is a 15-port Ethernet switch that offers remote LAN monitoring capabilities and allows users to increase the performance as well as availability of Ethernet backbones and workgroups.

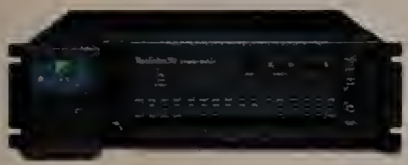
The new product is available in standard and enhanced versions. Both models offer 10Base-T, 10Base-2 and 10Base-FL connectivity, hot-swappable modules and the SwitchProbe port, which allows a Remote Monitoring probe or a protocol analyzer to be logically attached to any EPS-2115M port.

The enhanced version adds support for full-duplex Ethernet, address filtering and Virtual EtherSwitch, which lets the net manager assign ports to a specific virtual LAN within the EtherSwitch.

Fully configured with 10Base-T modules, the standard EtherSwitch EPS-2115M costs $11,500, or $767 per port. A similarly configured enhanced model is priced at $13,750, or $916 per port. Both models are available now.

©Bay: (508) 670-8888 or (408) 764-1180; Kalpana: (408) 988-1600.





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Circle Reader Service **#53**

Users group presses IBM to handle top concerns

BY MICHAEL COONEY

Atlanta

Their list of demands is short but critical.

After surveying its 1,400 members, the IBM users group Guide International Corp. said its users want better legacy network and application integration tools along with improved network management and client/server implementations.

The survey results, released last week at Guide's biannual meeting here, reflect not just technological issues that face large users, but business-oriented matters, as well. For example, the No. 1 issue was changing relationships with nontraditional technology providers.

Members said IBM can help in this role by continuing to sign up new business partners and allies.

"To be responsive to business needs, user organizations have to choose from an increasingly complex variety of products and services that don't come from traditional providers such as IBM," said Linda Mainord, president of Guide.

Guide members are also worried about how to retrain their current information systems departments to better handle the influx of distributed computing technologies.

"Many companies fail to exploit the skills they already have when they try to link existing technologies with new systems," Mainord said.

Guide told IBM that its users need better tools to integrate existing legacy networks and platforms with emerging technologies.

"Conversion of legacy systems to more advanced technology is costly, risky and time-consuming," Mainord said. "We hope that the emerging object-oriented application development environment will make this transition easier and help rid users of the application backlog that exists today."

The need for better systems and network management tools also came through loud and clear.

"If users can't effectively monitor their networks, then they can't manage them, and if they can't manage them, they can't service them, and that means problems just keep getting worse," said Mike Tomlianovich, a member of Guide's senior management team. "More effective management tools for multivendor net and systems management are [some of] the things we need most from IBM now."

INTERNET ISSUES

He added that a new concern of big users that was not on the survey is how to effectively communicate and do business over the Internet.

"IBM and others are only beginning to address this concern," said Tomlianovich, who is also a founding member of the Heartland Regional Network, a regional Internet provider in Peoria, Ill. "Our first suggestion for users is to encrypt everything with a public or private encryption tool."

Ellen Hancock, IBM senior vice president and group executive, told Guide members here that IBM was working on products to provide easier and more secure Internet communications. She cited IBM's recent introduction of it OS/2 Warp operating system, which has integrated Internet support.

In the client/server arena, Guide would like to see IBM and other vendors make it easier to combine multivendor platforms and networks in a client/server fashion.

"Many user organizations have been oversold on the capabilities of client/server technology and are having a great deal of difficulty implementing it," Mainord said.

> Many user organizations have been oversold on the capabilities of client/server technology."

Linda Mainord

"The challenge of bringing together multivendor products so that parts of a single business task can be performed on separate processors is beyond the capabilities of most users."

Guide initiated its Top Concerns survey in 1975 with an eye toward giving its user members a voice in the strategic planning of IBM. These concerns and the top issues from other large IBM user groups such as Share, Inc. will be presented to the firm in December to help shape future Big Blue product direction.

©Guide: (312) 245-1599.

Digital offers universal client system

BY PEGGY WATT

Maynard, Mass.

Digital Equipment Corp. last week announced a turnkey network client machine that consists of Alpha AXP hardware, Microsoft Corp. Windows NT 3.5 Workstation software and numerous network protocol stacks.

The Multia MultiClient Desktop gives users access to X Window System applications, local- or server-based Windows applications, as well as 3270 or Digital Virtual Terminal host data, each in a different Window. It also comes bundled with a 32-bit version of Mosaic for Internet access.

The system also features a collection of preinstalled network protocols (see graphic).

Built-in connectivity support

- IPX/SPX
- NETBEUI
- NETBIOS
- TCP/IP
- DECnet
- Pathworks
- LAN Manager

Digital positions the Multia as a "power desktop" between desktop PCs and workstations, according to Nina Hargus, product manager at the company.

"We feel this will have appeal at sites that have two or three different kinds of [network] environments, sometimes at the same desktop," Hargus said. "We've been hearing from users that they want to access any application from any desktop. They don't want to give up performance, and they want to integrate lots of applications, like legacy, Windows apps and Unix."

Multia also addresses net managers' needs by making LANs and desktops easier to manage, Hargus said.

CONFIGURATION MANAGER

Multia features Simple Network Management Protocol support and management software called Configuration Manager that is designed to let network managers set user access to network resources individually or by group. The Configuration Manager is available on CD-ROM.

The Multia system is based on a 166-MHz Alpha processor with a graphics coprocessor, 24M bytes of random-access memory (expandable to 256M bytes) and a 340M-byte hard drive. The offering has two PCMCIA slots and a Peripheral Component Interconnect option slot for high-speed net connections, such as Asynchronous Transfer Mode or Fiber Distributed Data Interface.

Digital is considering unbundling the Multia software to market it separately at a later date, as well as working on a way to tie in Apple Computer, Inc. Macintosh systems, Hargus said.

Multia, which will be shown at Comdex/Fall this week and ship in December, will be sold by value-added resellers, as well as by Digital's sales force. An entry-level system will start at $3,495.

©Digital: (800) 777-4343.

INTERNET *tip*

BY ADAM GAFFIN

One in a series of occasional tips on Internet-based information services.

Popular platforms

Proper Publishing's Internet Computer Index is a World-Wide Web (WWW) resource with links to numerous articles, files and other databases about three popular computing platforms:

- ✓ **Unix**
- ✓ **DOS and Windows**
- ✓ **Macintosh**

To access: Point your WWW browser at http://ici.proper.com/.

Gaffin can be reached via the Internet at agaffin@world.std.com.

It's showdown time on the 'Net

BY ELLEN MESSMER

Washington, D.C.

The Commercial Internet Exchange (CIX), an organization whose T-1 router is a central interconnection point for many Internet service providers, this Tuesday will start blocking IP traffic from any provider that doesn't join the club.

That's the ultimatum issued by the five-member board of CIX in spite of a vote by CIX members to suspend the packet blocking plan, an action designed to end any free rides for non-CIX service providers.

Internet users could see service disruptions not only because their provider's traffic is being blocked from the net, but because CIX could botch the delicate filtering effort. The filtering decision, made last August and delayed until now, unleashed a storm of controversy among Internet providers and users.

CIX was founded by UUNET Technologies, Inc., Performance Systems International, Inc. (PSI) and other providers three years ago as a way to exchange IP traffic without having to traverse the NSFNet, the Internet backbone that bans commercial traffic.

CIX rules required that members selling net capacity to resellers convince those resellers to join the organization and pay dues — now set at $7,500 per year. But the Internet market has mushroomed from a dozen or so providers to hundreds in the past two years, making policing the policy tough.

Consequently, the CIX board, consisting of officials from Bolt Beranek and Newman, Inc., EUNET, Inc., PSI, Sprint Corp. and UUNET, decided to start filtering out traffic from non-CIX members this week.

"It will have to be done very carefully, and it won't be easy," said CIX board member Bob Collet, SprintLink manager. "We don't want to cause any harm."

Collet was the only board member to vote against the plan and, ironically, the only one to make an effort last week to respond publicly to a barrage of criticism and inquiries from the public. He hopes CIX can eventually get out of the router business and focus on policy as a real trade group for its members.

THE FEAR FACTOR

But now, the fear factor is the chief reason most service providers are joining CIX, Collet acknowledged.

CIX membership has jumped from 40 in August to 104 today. With no sliding scale, small providers essentially subsidize the larger ones.

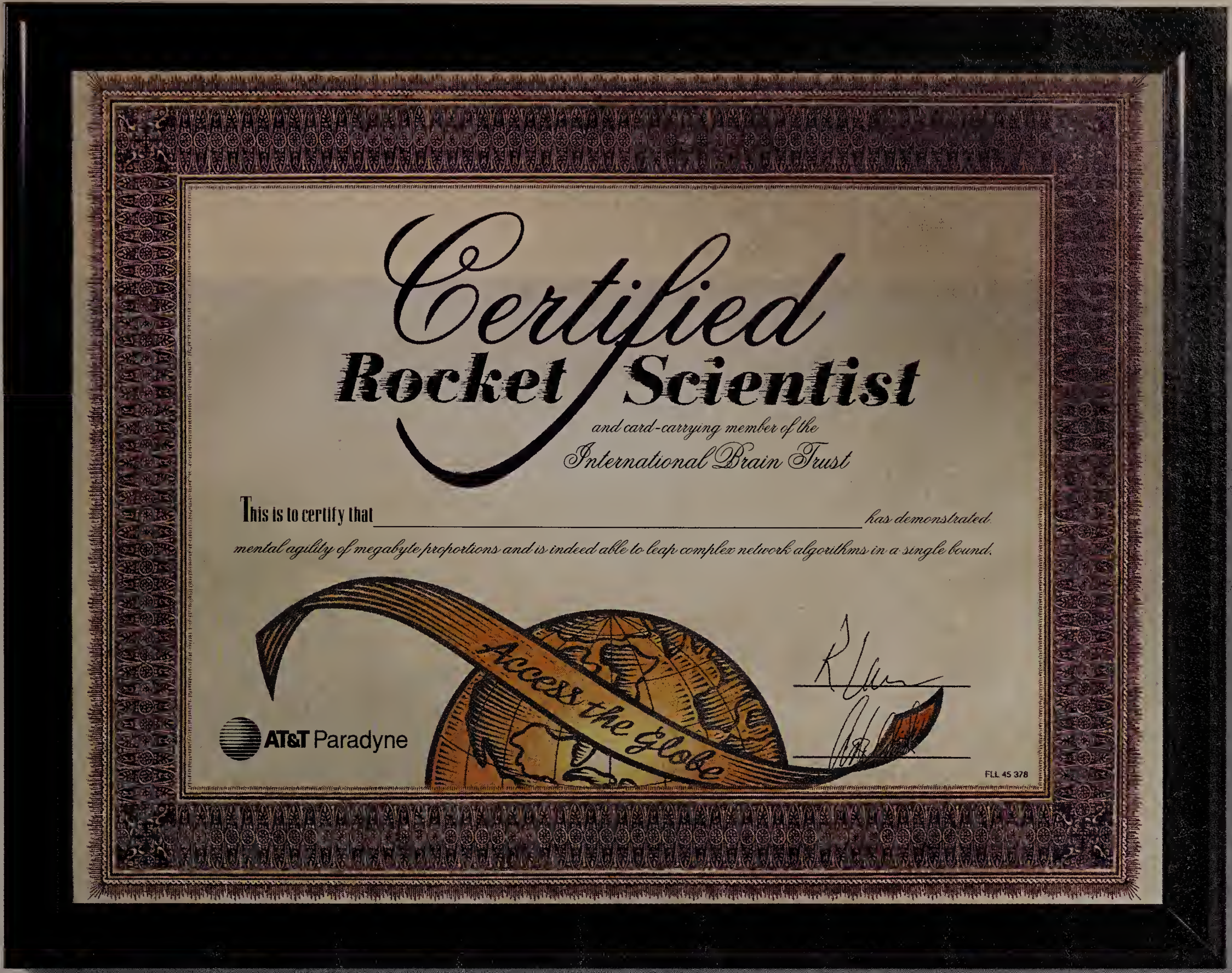
But one CIX member, Chicago-based MCSNet, Inc., withdrew from the organization in protest last week because the CIX board failed to fulfill its promise to reveal the results of a membership poll on the packet filtering plan before forging ahead.

"I would be interested in CIX provided they represented us as a trade group, but they're not," said MCSNet President Karl Denniger.

Experts disagree on whether it is possible to completely avoid transit across CIX to reach all sites on the Internet. But Denniger, partnering with consultant Joseph Stroup, has put together an alternative backbone routing service called Net99, Inc.

The Net99 architecture comprises full-mesh Asynchronous Transfer Mode hubs with dedicated lines between eight cities. A Net99 router also exchanges packets from peer to peer with UUNET, PSI, Pipex, Inc. and Advanced Network & Services, Inc. at 10M bit/sec using an Ethernet hub called Metropolitan Area Exchange East in Washington, D.C. "The gun CIX is holding to our heads is not loaded," Denniger said. "They won't be able to filter us out."

Providers such as Tampa, Fla.-based Creative Friendly Technologies, Inc., consider the CIX actions a restraint of trade and refuse to join. "CIX is headed for a full Department of Justice investigation," said James Horton, company president.



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EMC jumps into client/server backup mart

Additionally, vendor trio set to provide ATM network-based storage devices.

BY JODI COHEN AND
MARGARET DORNBUSCH

EMC Corp., a mainframe and mid-range backup mainstay, last week announced its foray into the client/server network backup market.

Separately, three other vendors will announce today an alliance under which they will bring to market storage devices that can be connected directly to an Asynchronous Transfer Mode network.

ALLEN

BACK IT UP

EMC's new Centriplex Enterprise Series of Integrated Cached Disk Array storage systems will provide backup for a variety of server hardware and software platforms, said Jeff Allen, vice president of the Open Storage Group at EMC. Operating systems supported include Unix, Microsoft Corp.'s Windows NT, Novell, Inc.'s NetWare and Banyan Systems, Inc.'s VINES.

Each Centriplex system can support as many as nine servers and provide users with up to 432G bytes of disk storage (up to 810G bytes with an expansion cabinet) and up to 512M bytes of cache memory. The system features selectable levels of Redundant Array of Inexpensive Disks (RAID) 0, 1 and 5, as well as disk hot spares.

The backup systems will be available in January, and pricing starts at $215,400.

For customers with lesser storage needs, EMC has developed the ModArray series of RAID storage systems, which will be available through OEM companies, including Unisys Corp.

The systems provide from 4G to 206G bytes of storage and concurrent RAID Levels 0, 1, 3 and 5.

ATM ALLIANCE

Another network storage option on the way combines start-up Advanced Telecommunications Modules, Ltd.'s low-cost ATM technology, Conner Peripherals, Inc.'s disk drive products and Ing. C. Olivetti & Co., S.p.A.'s systems integration services.

The offerings will support conventional as well as higher bandwidth applications, such as multimedia programs.

ATM networks can support much higher transfer rates than can traditional networks, and with directly attached devices, they can provide low-cost and high-performance storage.

The storage devices are scheduled to hit the market in early 1995. Pricing is not yet available.

✆EMC: (800) 424-3622.

Comments?

See "How to reach us" on the back page.

INTERNET *tip*

BY ADAM GAFFIN

One in a series of occasional tips on Internet-based information services.

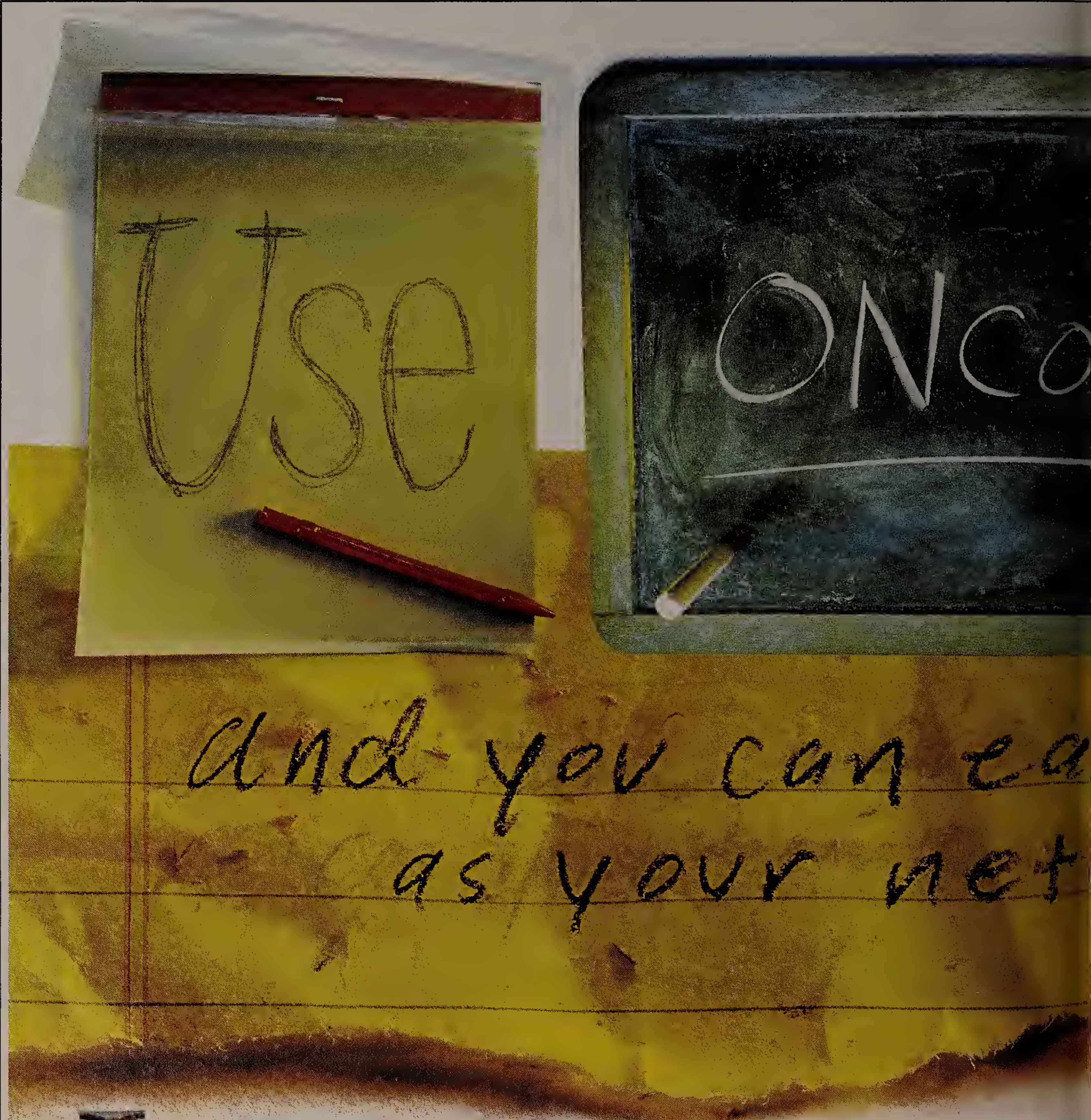
Vendors on-line

Growing numbers of computer vendors run on-line information services that can offer everything from product information to software patches. A World-Wide Web (WWW) server at Stanford University lets users search a list of these companies in the following ways:

- ✓ **Alphabetically**
- ✓ **By product category**

To access:
Point your WWW browser at **http://akebono.stanford.edu/yahoo/Economy/Business/Corporations/Computers.**

Gaffin can be reached via the Internet at agaffin@world.std.com.



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JOINT MARKETING

Newbridge teams with HP for fast Ethernet, net management

BY MICHAEL CSENGER

Herndon, Va.

Hewlett-Packard Co. and Newbridge Networks Corp. last week announced a partnership aimed at binding the companies' net management and high-speed LAN technologies.

The joint marketing and product development alliance will focus on supporting HP's 100VG-AnyLAN fast Ethernet protocol over Newbridge's Vivid ATM LANs. And the Vivid System Manager management platform, which already runs as an HP OpenView application, will be more tightly coupled with OpenView, providing a single management point of control.

"This is by far the largest and most important relationship we've announced," said Rick Tinsley, Newbridge's director of product marketing for Vivid. The companies will resell each other's products, presenting Newbridge with hefty channels for its Vivid line.

By the middle of next year, Newbridge will offer a Ridge product to support 100VG-AnyLAN. Under the Vivid architecture, Ridges handle interworking between traditional LAN protocols and ATM while a centralized Vivid Route Server handles routing.

Newbridge-HP initiatives

Stand-alone Vivid Ridge for HP 100VG-AnyLAN fast Ethernet	Due mid-1995
MicroRidge expansion module for HP AdvanceStack 100VG hubs	Due late 1995
ATM WAN module for AdvanceStack hub	Due mid- to late 1996
Ongoing integration of Vivid System Manager and HP OpenView	
Joint collaboration with third-party ATM and Ethernet application developers	
Joint reselling agreement	

Each VG-Ridge — which has not yet been formally named — will have one 100VG-AnyLAN fast Ethernet port and one 155M bit/sec ATM link to the ATM LAN.

With its 1-to-1 port ratio the VG-Ridge will simply support interworking. "If you want share that 100M-bit segment, you'd use an HP hub," Tinsley said. "They provide the fanout, and we'll provide the aggregation over ATM."

The 100VG protocol uses voice-grade (VG) unshielded twisted-pair wiring to carry Ethernet traffic at up to 100M bit/sec. It can be switched or shared, and has a priority feature that lets it support a mix of data and multimedia traffic.

"The whole point of 100VG is that it's a lot cheaper than FDDI or ATM," Tinsley said.

"It's just another interface for Vivid," said Todd Dagres, first vice president at The Robinson-Humphrey Company, Inc., a securities analysis firm in Atlanta. "HP is trying to blackmail everyone into supporting their 100VG; that's been their mantra for about a year now.

"Newbridge naturally wants to work with OpenView, and if they want to support all protocols, then they have to support 100VG, as well," he added. "This is much ado about nothing."

Newbridge will also develop a version of the VG-Ridge, called the MicroRidge, that can be installed as an expansion module on HP's AdvanceStack 100VG hubs. The MicroRidge will follow the stand-alone Vivid version by about six months, Tinsley said.

> **"Newbridge naturally wants to work with OpenView, and if they want to support all protocols, then they have to support 100VG."**

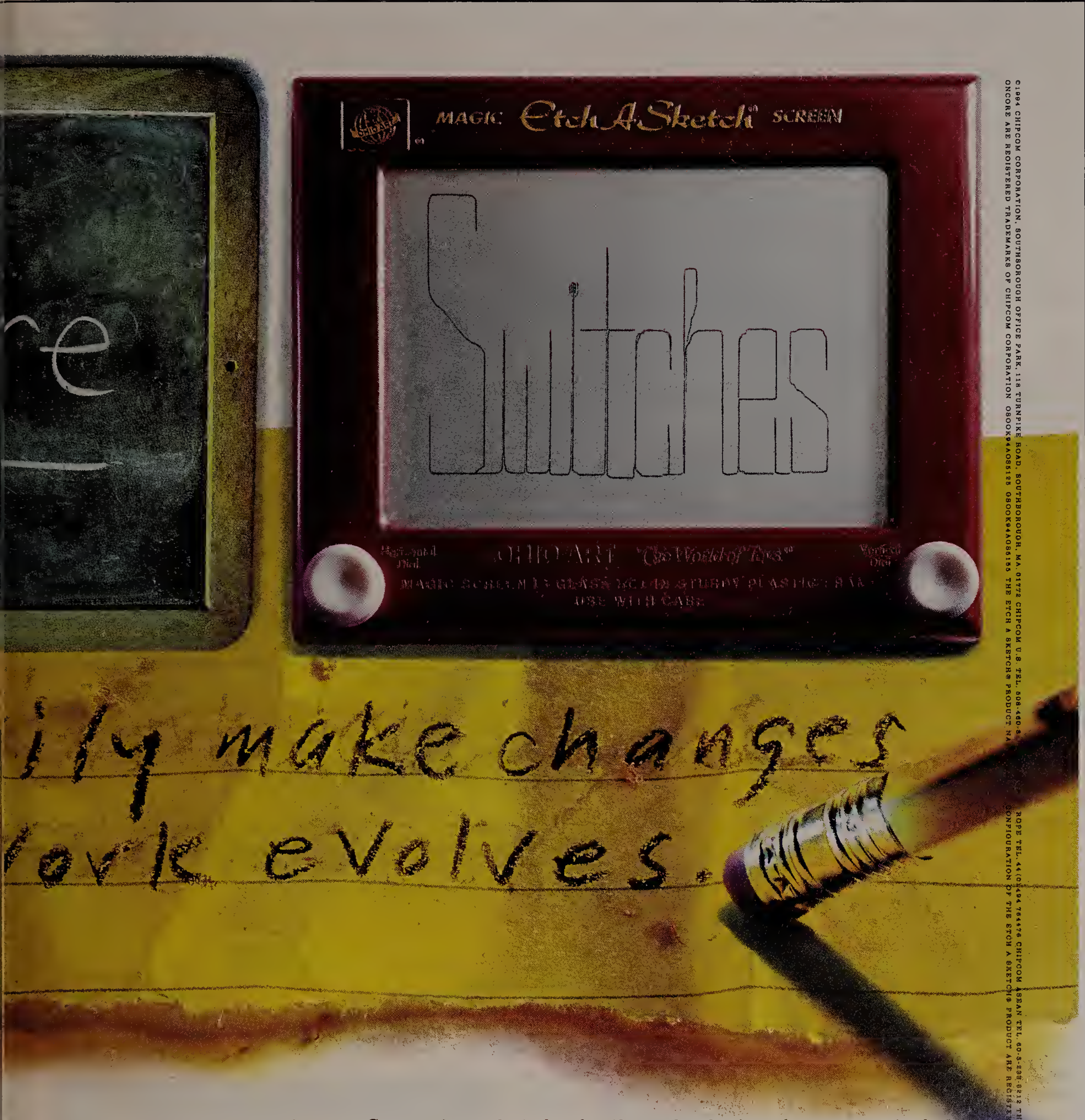
When the two firms are finished integrating their management systems, users should be able to access all Vivid management tools directly from HP's OpenView. The Vivid System Manager runs as a separate application under OpenView.

Both companies will also work closely with third-party developers to bring out ATM/100VG applications. For example, Newbridge two weeks ago announced it was working closely with Insoft, Inc., a desktop videoconferencing provider (*NW,* Nov. 7, page 10). He noted that HP is another major Insoft partner, and that Newbridge and HP will work together to support Insoft applications across Ethernet/ATM networks.

"We now want to facilitate more such relationships," Tinsley said.

Pricing for the VG-Ridge has not yet been set but should be in line with other Ridges, which cost $9,995, according to Tinsley.

©Newbridge: (800) 343-3600; HP: (800) 637-7740.



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Circle Reader Service #44

Republicans promise new outlook on telecom reform

'Deregulation' new buzzword; spending cuts in sight.

BY ELLEN MESSMER AND DAVID ROHDE

Washington, D.C.

With last week's midterm elections toppling the Democrats' control of Congress, victorious Republicans prepared to take over key committees overseeing the telecommunications industry and promised to move quickly in pushing for deregulation.

In addition to pushing for deregulation, which, among other things, would allow the regional Bell operating companies into the long-distance market, the new Republican regime also vowed to closely scrutinize the Clinton administration's billion-dollar Information Superhighway programs with an eye toward cuts.

Now a minority, the Democrats must cede to Republicans the chairmanships of congressional committees and subcommittees that shape telecommunications policy and direct government spending on networking projects.

While the new GOP chairpersons will not officially be named until the Republican caucus in early December, Sen. Larry Pressler (R-S.D.) is expected to replace Sen. Ernest Hollings (D-S.C.) as chairman of the committee on commerce, science and transportation.

Proposed telecommunications reform laws as well as many of the administration's favored National Information Infrastructure (NII) programs have originated within this committee. But now it won't be Democrats calling the shots.

Pressler, calling telecommunications reform necessary for the U.S. to remain competitive in technology, last week said he would push for a comprehensive revision of the Communications Act of 1934 early next year.

An affable and devout believer in free-market economics, Pressler is expected to work closely with Sen. Bob Packwood (R-Ore.), the likely new chairman of the Senate communications subcommittee who will replace Sen. Daniel Inouye (D-Hawaii).

Along with Sen. John Breaux (D-La.), Packwood this year fielded a bill called the Telecommunications Services Enhancement Act as an alternative to the Democrats' telecommunications reform bill, The Communications Act of 1994.

However, the Packwood bill, destined to go nowhere without the blessing of the subcommittee chairperson, got little attention. In the end, the Democrats' telecommunications reform package fared little better, perishing last month in a battle between Sen. Robert Dole (R-Kan.) and Hollings. Dole argued that the new law, on the brink of passage, would place too many restrictions on the local exchange carriers' entry into long distance.

The Packwood bill, which would let the Bell companies enter the interstate and intrastate long-distance markets within a year, is likely to be a starting point for future telecommunications reform legislation.

Over in the House, Rep. Jack Fields (R-Texas) will head the telecommunications and finance subcommittee in place of Rep. Ed Markey (D-Mass.). And either Reps. Carlos Moorhead (R-Calif.) or Thomas Bliley (D-Va.) may chair the Energy and Commerce committee in place of Rep. John Dingell (D-Mich.).

Other key posts, like the House Science, Space and Technology committee and the Senate Appropriations committee, will also pass into Republican hands. Sources on Capitol Hill warn that the billion-dollar programs backed by Vice President Al Gore for technology research in the name of the NII will get closer scrutiny from Republicans who are looking to cut government spending.

These myriad programs involve hundreds of millions of dollars in grants for subsidized nets, supercomputer research, automated medical systems and technology consortium. But the Republicans' expressed desire to boost defense spending could benefit net initiatives in the Pentagon and elsewhere in the military.

Some network managers last week wondered aloud whether any bipartisan cooperation will take place at all or whether Republican efforts will simply be aimed at unseating Clinton in the next election.

"The new Congress is not going to pass anything that makes Bill Clinton look good, and that bothers the hell out of me," said Steve Rosenfeld, manager of computing and communications at the University of Texas at El Paso. Z

Sen. Larry Pressler (R-S.D.)

Elected to Senate: 1978

Expected appointment: Chairman of the Senate commerce, science and transportation committee

Top agenda items: Telecommunications legislation and comprehensive federal agency oversight, including the FCC.

Sen. Bob Packwood (R-Ore.)

Elected to Senate: 1968

Expected appointment: Chairman of Senate communications subcommittee and finance committee

Top agenda items: Seeking complete telecommunications deregulation "that would let the cards fall where they may," according to a staffer.

Partner

Continued from page 3

large part because it is really the only client/server messaging system from a major vendor actually on the market today, he said.

With some 2,000 Notes users and between 3,000 and 4,000 cc:Mail users at BellSouth, tight integration of OpenMail and LCS would be critical, Stevens said. He would particularly like to see integration of Notes' database replication with OpenMail's more scalable store-and-foreword messaging transport.

The increased scalability that could come through OpenMail is also important to Jeff Held, a partner in the technology services practice at Big Six consulting firm Ernst & Young in New York, which is beginning to roll Notes out across the company. OpenMail's scalability is derived from its integration with powerful HP server hardware and its client/server design, he said.

Held wants to use OpenMail as a substitute transport for Notes databases, now moved around an enterprise via Notes' database replication technology. Key to that would be the ability to transfer the hyperlinks within Notes documents across an OpenMail backbone.

WHAT ABOUT EMX?

One question that remained unanswered following the alliance announcement revolves around the future of EMX, the messaging switch Lotus acquired when it bought SoftSwitch, Inc. earlier this year.

Mike Zisman, formerly SoftSwitch's chief executive officer and now a Lotus vice president, said HP-UX "certainly sounds like a great platform" for the next major revision of EMX, which now runs only on Data General Corp. Unix platforms. But whether any EMX technology gets built into LCS remains to be seen, he said.

Wil Roelandts, senior vice president of HP's Computer Systems Organization, said HP will continue to support and enhance OpenMail as an E-mail switch, but added that HP sees the product being sold mainly as a subset of LCS. HP sees LCS as its "future integrated messaging and groupware standard," he said. Z

Solstice

Continued from page 1

half years ago, Biles said.

"We've published architectures for SunNet Manager and Project Encompass in the past; what we haven't done is publish an integrated systems and network management architecture," he said.

Biles confirmed that the company will do just that early next year but would not confirm the Solstice name.

Solstice will support interfaces and applications for autotopology, device mapping, network and systems fault management, event and performance management, systems administration and backup. It will allow administrators to automate tasks, such as downloading software to desktops from servers; replicate functionality across multiple systems, such as software changes and network reconfiguration; and simplify representation of and interaction with networks and systems through object modeling, which shields protocol intricacies from the administrator, Biles said.

Among the standards-based interfaces to be included is the Desktop Management Task Force's Desktop Management Interface for collecting configuration information on networked workstations.

Hundreds of independent software vendor (ISV) applications will be supported right off the bat, Biles said, because the framework includes all of the existing SunNet Manager application program interfaces. SunSoft also has a lengthy list of ISVs that provide systems management functionality on the company's Solaris operating system, he added.

From a competitive standpoint, Biles likened Solstice's Encompass component to IBM's Karat project and HP's Synergy platform.

From a competitive standpoint, Biles likened Solstice — specifically, the Encompass component — to IBM's Karat project and HP's Synergy platform. Karat is an object-oriented management framework for building common management applications across all of IBM's major systems. Synergy is a future release of HP's OpenView platform that will feature protocol-independent event management and a common data repository.

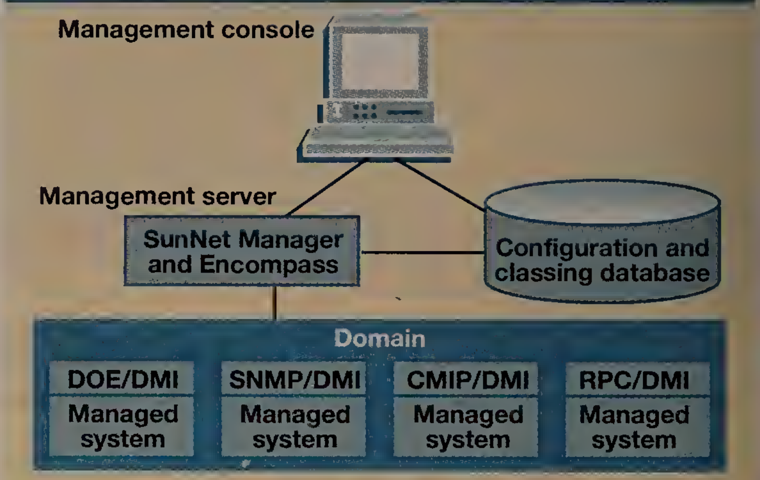
Analysts said Solstice may not be enough for SunSoft to gain back the market momentum in network and systems management it has lost of late to HP.

"I think their greatest weakness is in multivendor systems administration and automation in large, complex networks," said Jill Huntington-Lee, principal analyst at Brandywine Network Associates in Cinnaminson, N.J. "They have a number of utilities that can handle the Sun environment. And even though the strategies of the other vendors are still premature, at least they've announced directions for how they plan to address the multivendor area. I question SunSoft's commitment to enterprisewide management since enterprises are multivendor."

Biles sees nothing wrong with that for now.

"Right now, best of breed in systems management is available on Solaris first, and we intend to keep it that way," he said. Z

Sum of Solstice



SunSoft's new Solstice framework will allow users to manage network devices and systems using objects, such as SunSoft's DOE, as well as via SNMP, CMIP or RPCs. Management engines, such as SunNet Manager and Encompass, will share data from a common database.

GRAPHIC BY SUSAN J. CHAMPENY

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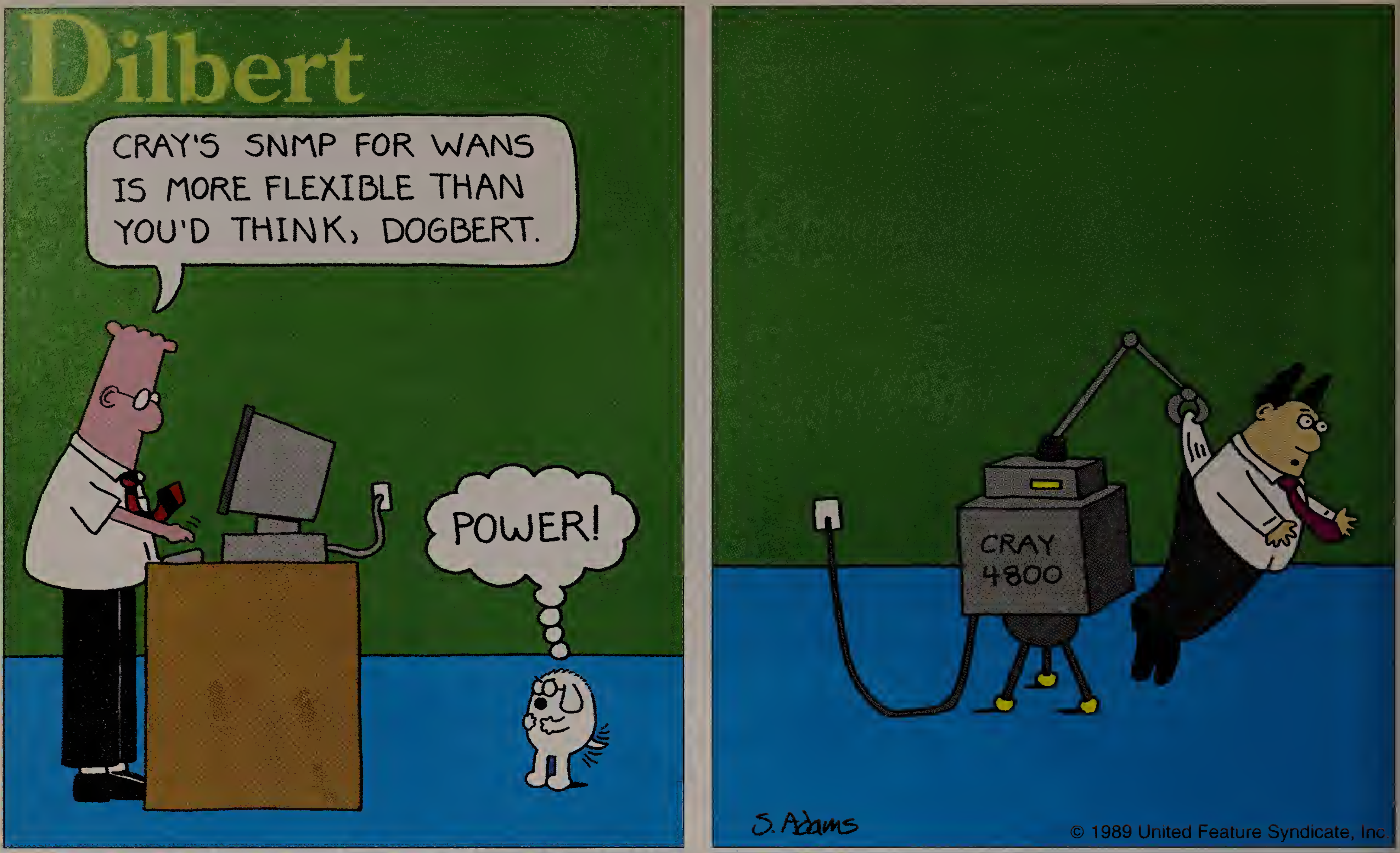
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CRAY 4800
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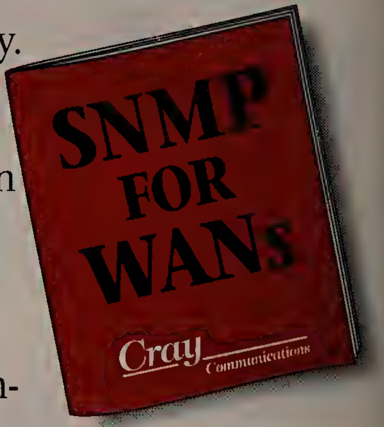

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NETWORK WORLD

The Newsweekly of Enterprise Network Computing

☐ My home address is also my business address.

Optional Delivery Address:
Enter your home address below if your company will not accept delivery at your business address:

____

Street Address City State Zip

If military, please specify branch and base: ________________________________

If government, please specify division: ________________________________

1 Industry: (check one only)

01. ☐ Manufacturers (other)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Healthcare Services
05. ☐ Hospitality/Entertainment/ Recreation
06. ☐ Media/TV/Cable/Radio/Print
07. ☐ Retail/Wholesale Trade/Business Services
08. ☐ Transportation
09. ☐ Utilities
10. ☐ Education
11. ☐ Process Industries (Mining/Construction/ Petroleum Refining/ Agriculture/Forestry)
12. ☐ Government Federal/State/Local
13. ☐ Military
14. ☐ Aerospace
15. ☐ Consultants (Independent)
16. ☐ Carriers/Interconnects
17. ☐ Manufacturers (Computer/ Communications)
18. ☐ Systems/Network Integrators (VAR/VAD/ VAN/Systems/Software Houses)
19. ☐ Distributors Communications/ Computers
20. ☐ Other________________

2 What is your Job Function? (check one only)

NETWORK IS Management:

1. ☐ Networking Management
2. ☐ LAN Management
3. ☐ Datacom/Telecom Management
4. ☐ IS,IT,MIS,Systems Management
5. ☐ Engineering Management
6. ☐ Corporate Management (CIO,CEO,PRES,VP, DIR,MGR,Financial Management)
7. ☐ Consultant (Independent)
8. ☐ Other________________

3 What is the total number of sites for which you have purchase influence? (check one only)

1. ☐ 100+
2. ☐ 59 - 99
3. ☐ 20 - 49
4. ☐ 10 - 19
5. ☐ 2 - 9
6. ☐ 1
7. ☐ None

4 What is your scope and involvement in purchasing decisions for network products & services for your enterprise?

A. SCOPE (check one only)
1. ☐ Corporatewide
2. ☐ Multienterprise
3. ☐ Departmental
4. ☐ None

B. INVOLVEMENT (check all that apply)
1. ☐ Recommend/Specify
2. ☐ Approve
3. ☐ Evaluate
4. ☐ Determine the need
5. ☐ None

5 Check ALL that apply in columns A and B:

A: I am involved in the purchase of the following products/services.
B: I plan to purchase the following products/services.

A B
☐ 100 ☐ **LOCAL AREA NETWORKS**
☐ 01. ☐ Local Area Networks
☐ 02. ☐ Network Operating Systems Software (NOS)
☐ 03. ☐ LAN Storage Devices (optical, tape, disk, etc.)
☐ 04. ☐ LAN Backup Systems (optical, tape, disk, etc.)
☐ 05. ☐ Network Test Equipment/Diagnostic/ Management Software
☐ 06. ☐ Hubs/Intelligent Hubs
☐ 07. ☐ Cables, Connectors, Baluns
☐ 08. ☐ UPS
☐ 09. ☐ Network Adapter Boards/Network Interface Cards
☐ 10. ☐ Peer-to-Peer LANs
☐ 11. ☐ Wireless Networks
☐ 12. ☐ SNMP Network Management
☐ 13. ☐ ATM Switches
☐ 14. ☐ Remote LAN Access
☐ 15. ☐ Ethernet Switches
☐ 16. ☐ LAN Servers
☐ 17. ☐ Superservers
☐ 18. ☐ Remote Access/Communications Servers

A B
☐ 101 ☐ **REMOTE/WIRELESS COMPUTING**
☐ 19 ☐ Laptops
☐ 20. ☐ Notebooks
☐ 21 ☐ PDAs
☐ 22 ☐ PCMCIA
☐ 23. ☐ Mobile Data Services
☐ 24. ☐ Wireless Data Services
☐ 25. ☐ Wireless Data Equipment

A B
☐ 102 ☐ **INTERNETWORKING**
☐ 26. ☐ Bridges
☐ 27 ☐ Routers
☐ 28. ☐ Gateways
☐ 29 ☐ Bridge/Routers

A B
☐ 103 ☐ **COMPUTERS/PERIPHERALS**
☐ 30. ☐ Micros/PCs
☐ 31. ☐ Minis
☐ 32. ☐ Mainframes
☐ 33. ☐ Workstations
☐ 34. ☐ Front-End Processors
☐ 35. ☐ Terminals
☐ 36. ☐ Printers
☐ 37. ☐ Cluster Controllers
☐ 38 ☐ Fax Machines
☐ 39. ☐ Monitors

A B
☐ 104 ☐ **SOFTWARE/APPLICATIONS**
☐ 40. ☐ Network Management
☐ 41 ☐ Systems Management
☐ 42 ☐ Micro to Mainframe
☐ 43 ☐ Security
☐ 44 ☐ Communication/Terminal Emulation
☐ 45 ☐ Word Processing
☐ 46. ☐ Operating Systems
☐ 47 ☐ Client Server Applications Development

A B **SOFTWARE/APPLICATIONS (cont'd)**
☐ 48. ☐ Applications Development
☐ 49. ☐ Data Base Management/RDBMS
☐ 50. ☐ Spreadsheet
☐ 51. ☐ Groupware
☐ 52. ☐ EDI
☐ 53. ☐ E-Mail
☐ 54. ☐ Windows/Graphical User Interface
☐ 55. ☐ 4GL Development/Case
☐ 56. ☐ Multimedia
☐ 57. ☐ Graphics/DTP
☐ 58. ☐ Remote Access
☐ 59. ☐ Imaging
☐ 60. ☐ Suites
☐ 61. ☐ Middleware
☐ 62. ☐ Document Management

A B
☐ 10S ☐ **WIDE AREA NETWORKS EQUIPMENT & SERVICES**
☐ 63. ☐ Modems (9.6K bps and over)
☐ 64. ☐ Modems (under 9.6K bps)
☐ 65. ☐ T-1/T-3 Multiplexers
☐ 66. ☐ T-1/T-3 Services
☐ 67. ☐ Inverse Multiplexers
☐ 68. ☐ Fractional T-1
☐ 69. ☐ SMDS
☐ 70. ☐ ATM (Asynchronous Transfer Mode)
☐ 71. ☐ Matrix Switches
☐ 72. ☐ Packet Switches
☐ 73. ☐ Protocol Converters
☐ 74. ☐ Diagnostic/Test Equipment
☐ 75. ☐ DSU/CSU
☐ 76. ☐ Microwave
☐ 77. ☐ Fax Boards/Modems
☐ 78. ☐ VSAT
☐ 79. ☐ Fiber Optic
☐ 80. ☐ Satellite
☐ 81. ☐ ISDN
☐ 82. ☐ PBXs (over 1000 lines)
☐ 83. ☐ PBXs (under 1000 lines)
☐ 84. ☐ Automatic Call Distributors
☐ 85. ☐ Voice Messaging Systems
☐ 86. ☐ Videoconferencing/Teleconferencing
☐ 87. ☐ Voice Response/Processing
☐ 88. ☐ Dedicated Leased Line
☐ 89. ☐ Switched Data
☐ 90. ☐ E-Mail/Online Services
☐ 91. ☐ Image Processing
☐ 92. ☐ 800/900 Services
☐ 93. ☐ WATS/MTS
☐ 94 ☐ International
☐ 95. ☐ Virtual Networks
☐ 96. ☐ Frame Relay
☐ 97. ☐ Value Added Services
☐ 98. ☐ CIT (Computer-Integrated Telephony)

☐ 99. ☐ None of the above (1-98)

6 What is the total number of LANS, Workstations/Nodes: At this Location/ In your Organization?

At This Location:	LANs		Workstations/ Nodes	Entire Organization:	LANs		Workstations/ Nodes
1.	☐	5000+	☐	1.	☐	5000+	☐
2.	☐	1,000 - 4,999	☐	2.	☐	1,000 - 4,999	☐
3.	☐	100 - 999	☐	3.	☐	100 - 999	☐
4.	☐	50 - 99	☐	4.	☐	50 - 99	☐
5.	☐	10 - 49	☐	5.	☐	10 - 49	☐
6.	☐	9 or less	☐	6.	☐	9 or less	☐
7.	☐	None of the above	☐	7.	☐	None of the above	☐

7 Check ALL that apply in columns A and B:

A: The following network platforms are currently installed.
B: The following network platforms are currently planned.

A B
☐ SS ☐ **NETWORK ARCHITECTURES**
☐ 01. ☐ SNA
☐ 02. ☐ DECNET
☐ 03. ☐ MAP/TOP
☐ 04. ☐ TCP/IP
☐ 05. ☐ DCA (Unisys)
☐ 06. ☐ X.25
☐ 07. ☐ Novell IPX/SPX
☐ 08. ☐ APPC/APPN/LU6.2
☐ 09. ☐ NETBIOS
☐ 10. ☐ OSI
☐ 11. ☐ APPLETALK
☐ 12. ☐ NSF
☐ 13. ☐ XNS
☐ 14. ☐ OTHER________________

A B
☐ 56 ☐ **NETWORK OPERATING SYSTEM**
☐ 15. ☐ LOCALTALK (APPLETALK)
☐ 16. ☐ BANYAN (VINES)
☐ 17. ☐ DCA (IRMALAN)
☐ 18. ☐ DCA (10-NET)
☐ 19. ☐ IBM (LAN SERVER)
☐ 20. ☐ IBM (PC LAN PROGRAM)
☐ 21. ☐ MICROSOFT (LAN MANAGER)
☐ 22. ☐ NOVELL (NETWARE, 2X, 3X, 4X)
☐ 23. ☐ PROTEON (PRONET)
☐ 24. ☐ 3COM (3+, 3+OPEN)
☐ 25. ☐ ARTISOFT (LANTASTIC)
☐ 26. ☐ HAYES (LANSTEP)
☐ 27. ☐ DEC (PATHWORKS)
☐ 28. ☐ WINDOWS NT/ADVANCED SERVER
☐ 29. ☐ OTHER________________

A B
☐ 57 ☐ **LAN ENVIRONMENT**
☐ 30. ☐ 4M TOKEN RING
☐ 31. ☐ 16M TOKEN RING
☐ 32. ☐ ARCNET
☐ 33. ☐ ETHERNET
☐ 34. ☐ 100 M ETHERNET
☐ 35. ☐ STARLAN
☐ 36. ☐ FDDI
☐ 37. ☐ LOCAL TALK
☐ 38. ☐ 10BASE-T
☐ 39. ☐ ATM
☐ 40. ☐ OTHER________________

A B
☐ 58 ☐ **COMPUTER OPERATING SYSTEM**
☐ 41. ☐ DOS
☐ 42. ☐ UNIX/XENIX/AIX
☐ 43. ☐ OS/2
☐ 44 ☐ OS/2.X
☐ 45. ☐ IBM MVS
☐ 46. ☐ IBM VM
☐ 47. ☐ DIGITAL VMS
☐ 48. ☐ MACINTOSH
☐ 49. ☐ WINDOWS
☐ 50. ☐ WINDOWS NT
☐ 51. ☐ X WINDOWS
☐ 52. ☐ SOLARIS
☐ 53. ☐ OTHER________________

☐ 54. ☐ None of the above (1-53)

8 For which areas outside of the U.S. do you have purchase influence? (check all that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ None

9 Which of the following hardware platforms are installed/planned in your company? (check all that apply)

	Mainframes		Minis			Mainframes		Minis	
	Installed	Planned	Installed	Planned		Installed	Planned	Installed	Planned
01. IBM	☐	☐	☐	☐	06. DATA GENERAL	☐	☐	☐	☐
02. DIGITAL	☐	☐	☐	☐	07. HP	☐	☐	☐	☐
03. AMDAHL	☐	☐	☐	☐	08. TANDEM	☐	☐	☐	☐
04. AT&T	☐	☐	☐	☐	09. UNISYS	☐	☐	☐	☐
05. BULL HNIS	☐	☐	☐	☐	10. OTHER__________	☐	☐	☐	☐

Which of the following do you have installed/planned: (USE NUMBERS ONLY)

	At This Location		Entire Organization	
	Servers	Clients/Nodes	Servers	Clients/Nodes
11. POWER MACINTOSH				
12. MACINTOSH OTHER				
13. POWER PC BASED				
14. PENTIUM BASED				
15. 80486 BASED				
16. 80386 BASED				
17. 80286 BASED				
18. 80806/80808 BASED				
19. ALPHA BASED				
20. RISC/UNIX BASED WORKSTATIONS				
21. OTHER				

10 What is the estimated value of networking equipment and services that you help specify, recommend or approve annually? (check one only)

01. ☐ $100 million and over
02. ☐ $50 - $99.9 million
03. ☐ $25 - $49.9 million
04. ☐ $20 - $24.9 million
05. ☐ $10 - $19.9 million
06. ☐ $5 - $9.9 million
07. ☐ $1 - $4.9 million
08. ☐ $500,000 - $999,999
09. ☐ $499,999 or less
10. ☐ None of the above

11 Estimated gross annual revenues of your entire company/institution: (check one only)

1. ☐ Over $10 billion
2. ☐ $1 to $9.9 billion
3. ☐ $500 to $999.9 million
4. ☐ $100 to $499.9 million
5. ☐ $50 to $99.9 million
6. ☐ $10 to $49.9 million
7. ☐ $5 to $9.9 million
8. ☐ $4.9 million or less
9. ☐ None of the above

12 Estimated number of employees: At This Location/In Entire Organization.

At This Location:
1. ☐ Over 10,000
2. ☐ 5,000 - 9,999
3. ☐ 2,500 - 4,999
4. ☐ 1,000 - 2,499
5. ☐ 500 - 999
6. ☐ 499 or less

Entire Organization:
1. ☐ Over 10,000
2. ☐ 5,000 - 9,999
3. ☐ 2,500 - 4,999
4. ☐ 1,000 - 2,499
5. ☐ 500 - 999
6. ☐ 499 or less

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ENTERPRISE INTERNETS

Data Network Architectures, Standards, Equipment and Management

BRIEFS

Eicon Technology Corp. last week rolled out **WAN Services for OS/2,** software that lets users employ public or private **X.25** lines with **IBM's LAN Distance** remote LAN access program. The OS/2-based server software supports as many as 128 users and requires use of an EiconCard WAN board.

The firm also announced WAN services software for **Lotus Notes** that lets users connect multiple Notes servers over an X.25 net. The new program integrates a Lotus Connect for X.25 software driver in Eicon's **OSI Gateway for OS/2** application.

WAN Services for OS/2 ships this month for $595. Eicon's OSI Gateway for OS/2 is available with the Lotus driver for $795. EiconCards range in price from $1,095 to $1,695.

Eicon: (514) 631-2592.

The leading enterprise management vendors will convene in Santa Clara, Calif., this week to compete head-to-head for the best management solution at the **Enterprise Management Summit '94** show.

Summit '94 will include a theater that simulates a live enterprise computing environment of DECnet, Systems Network Architecture, NetWare and TCP/IP networks and distributed applications and databases.

Vendors including Computer Associates International, Inc., Digital Equipment Corp., Groupe Bull SA, Hewlett-Packard Co., IBM and NetLabs, Inc. will display their product's abilities to perform asset, fault and administration management in various environments.

Enterprise Management Summit: (800) 340-2111.

The Arlington, Va.-based trade organization **Information Technology Association of America (ITAA)** last week set up a special committee to solicit comment on the impact of **Microsoft Corp.**'s proposed $1.5 billion acquisition of **Intuit, Inc.** Information technology companies, financial institutions and users are invited to submit oral or written comments to ITAA by Dec. 2.

ITAA: (703) 284-5333.

Memorex integrates LANs and SNA

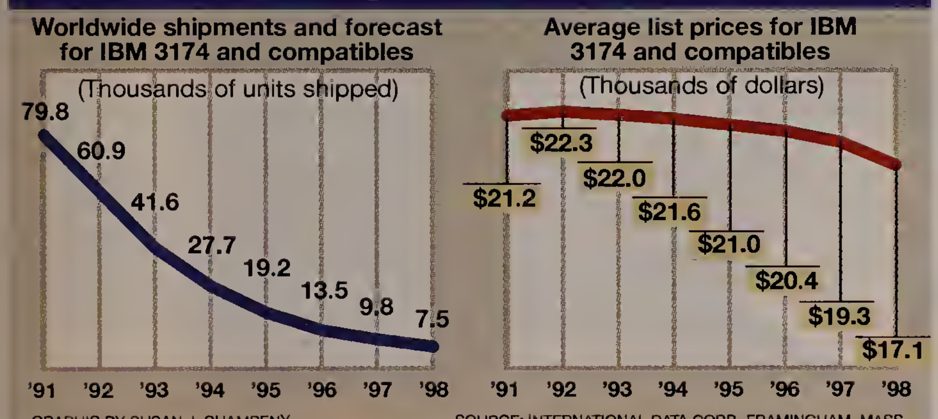
BY MICHAEL COONEY

Raleigh, N.C.

Memorex-Telex Corp. last week rolled out a suite of controllers and software designed to offer Systems Network Architecture users improved integration with enterprise LAN resources.

The products included the 9300 Internetwork Server family of LAN-to-mainframe interconnection devices, two new models of the firm's 1174 controller that add more capacity and new Generation C controller software with improved LAN support.

Cooling controller climate



GRAPHIC BY SUSAN J. CHAMPENY

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

The 9300 family consists of three models: the 9301 Communications Concentrator, the 9311 Network Access Server and the 9341 LAN Device Server. All share common hardware and support 11 slots that can be software-configured to support any combination of token-ring, Ethernet, WAN, and mainframe bus and tag channel cards. Each model can also be managed via the host NetView system or any industry-standard Simple Network Management Protocol platform.

The 9301 Communications Concentrator is designed as a Synchronous Data Link Control-to-Logical Link Control 2 (LLC2) concentration and conversion device. Using the 9301, users can concentrate as many as 176 SNA/SDLC devices onto a token-ring or Ethernet LAN, which would then have access to mainframe resources.

The 9311 Network Access Server acts as a LAN-to-SNA gateway providing support for up to 256 downstream LAN devices. Unique to the 9311 is its implementation of IPX routing, which lets Novell, Inc. NetWare users communicate with the mainframe and other NetWare users over the SNA backbone.

The device also supports Data Link Switching, enabling it to encapsulate SNA LAN traffic in IP packets for transmission over TCP/IP backbones, but only to another 9311.

The 9341 LAN Device Server supports SNA terminals and provides SNA gateway services for personal computers running a variety of emulation packages. It combines the functions of both the 9311 and 9301 in one package capable of supporting up to 1,024 SNA/SDLC devices, 256 LAN stations or a combination of the two.

Memorex expanded the 1174, its IBM 3174-compatible controller line, with two new models. The Models 1174-15 and -25 offer double the capacity and triple the throughput of its existing models. Both boxes now support 27.5M bytes of memory, up from a maximum of 11.5M bytes.

The 1174-15 is a 14-slot controller that can support 32 to 128 coaxial-attached terminals or controllers, up to 1,024 logical units and eight SNA hosts. The largest 1174 today can support 576 logical units and 64 terminals. The 1174-15 also supports as many as eight token-ring, Ethernet or SDLC links. The 1174-25 is a nine-slot, rack-mountable controller that can connect to as many as six SNA hosts. It supports the same amount of users and logical units as the 1174-15.

New Generation C software, which runs in both new models, adds support for TCP/IP sessions over

See **Memorex**, *page 29*

HP weighing effects of OpenView enhancements

BY JIM DUFFY

Palo Alto, Calif.

Hewlett-Packard Co. is active on several fronts in an effort to keep its OpenView platform ahead of the distributed network and systems management curve.

Those activities include support for ISICAD, Inc.'s new InfoManager software, which lets users easily and simultaneously update, access and generate reports from multiple vendors' databases. Another is the planned extension of HP's Performance Collection Software (PCS) for Unix systems to collect performance data on network devices.

Both enhancements can bolster features already part of or soon to be part of OpenView. InfoManager, for example, can serve as a front end to HP's upcoming common data repository, a logical database of management information for OpenView.

OpenView season

Two enhancements could be on the way for HP's OpenView:

- **A front end to HP's common data repository from ISICAD, Inc. that provides easy access and reporting of information from multivendor databases.**
- **Addition of Performance Collection Software to HP probes and analyzers that provide more detailed network performance data for OpenView.**

InfoManager is a graphical user interface-based tool that handles all interaction with relational databases. It provides a consistent interface across hardware platforms and multivendor databases, which allows users to obtain the required information without having to worry about which database it's stored on or where it's located in the network (*NW*, Sept. 26, page 15).

For example, managers can use point-and-click commands to gather information from different management applications, which may be stored in different databases, and create reports based on that information. To report on the impact of upgrading routers in the network, the manager might use a physical management application to determine where certain routers are located, a help desk program to ascertain the service history of the routers and an accounting package to determine chargeback information.

GETTING HP'S REPOSITORY

Analysts say InfoManager will help users get to HP's repository when it ships with the Synergy version of OpenView at an as-yet undisclosed date.

"The HP [repository] is going to take awhile to roll out," said Jill Huntington-Lee, principal of Brandywine Network Associates in Cinnaminson, N.J. "What ISICAD brings is a lightweight stepping stone toward that functionality. It's nice for HP to be able to say, 'No, we don't have products based on the [repository] available yet, but in the interim, this might save some time.'"

HP will announce its support of InfoManager at this week's Enterprise Management Summit show in Santa Clara, Calif. HP and ISICAD are currently hammering out the details of a joint marketing agreement that would allow each company to recommend use of InfoManager with OpenView, said Scott Safe, OpenView marketing program manager.

"InfoManager allows us to complete the full reporting solution," Safe said. "There is a big demand for easy reporting tools on the data collected by OpenView. We did not have plans to develop a sophisticated tool like this."

A sophisticated tool that HP did develop is PCS. Currently tailored for management of Unix systems, PCS will soon be extended to collect network performance data from HP's probes and monitors, said Jim Grant, product marketing manager for performance and resource management in HP's software technology division.

The technology to enable that is HP's Data Source Integration, agent software that monitors networks, systems, applications and databases against predefined thresholds and triggers alerts when those thresholds are exceeded.

"We're incorporating templates for the integration of those [network] monitors' information into PCS," Grant said. "Given any external data source, a customer could format the information into PCS very easily. It does some interesting things in terms of synching up the network information with the system information" so users can correlate performance statistics between the two to gauge the effect of one on the other.

There are no plans to bundle PCS with OpenView's Network Node Manager application, but some of HP's LANProbe and NetMetrix monitoring and diagnostic products can display information on an OpenView console (*NW*, March 21, page 6). So adding PCS to those devices would give OpenView users a richer management environment by providing more performance-related data.

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*Circle Reader Service #**65***

INTERNETWORKING MONITOR

by Scott Bradner

The days of future present?

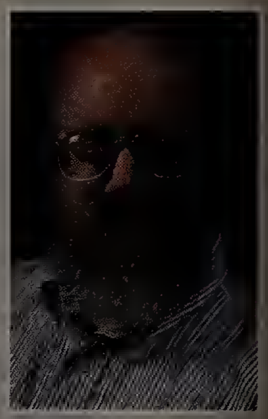
On Nov. 5, *The Boston Globe* ran the following headline on a story about the San Francisco newspaper strike: "Strike pushes papers into cyberspace." The article said that because of the strike, "managers at the *Chronicle* and the *Examiner* hurried to launch an on-line version of the paper on the Internet global network. In turn, striking employees have created their own on-line newspaper."

(Unfortunately, the *Globe* managed to avoid giving any pointers to these services, so I have been unable to take a look. If any of you out there in readership-land have a pointer, please send it to me.)

The reporter seemed to think there might be some future in this sort of thing, but mostly for special cases such as stock brokers or researchers. An analyst was quoted as saying, "Electronic presentation lacks the appeal of holding and scanning a real, live newspaper."

Well, I do quite a bit of my work using electronic presentation, and, for me, the appeal of the 'real, live newspaper' kind of peters out after it is read and has to be stored for the mandatory recycling here in Cambridge.

But the *Globe* article left out one tiny problem with on-line newspapers and other on-line document services. How is the provider of the information going to get paid for it? Sure, if I go access the server and take a copy, you can record that fact and then send me a bill. You can even prevent me from taking a copy unless I have previously agreed that I will pay for it. But once I have the bits, how do you control how many copies I make or where I send them? This problem is well known as it relates to illegal software duplication, but less attention has been paid to copying other intellectual property.



Protection of intellectual property rights has led to many legal actions and has delayed the introduction of new technology more than once. Audio CDs, videotape recorders and DAT tape systems all have been affected by the fear of compromising intellectual property rights.

Things are hard enough when there is something physical involved, such as a piece of paper, as any copy center will tell you. It gets much more difficult when all you've got is ephemeral bits. There is also the problem that I might change the bits to remove the original author's identification or to change the form or substance of the information. This could be done to circumvent royalties, make false claims of authorship or to discredit the actual author by distorting the work.

Digital signatures can protect against tampering with the information, but, at this time, little can be done to prevent unauthorized duplication.

It is not just the information owners who are contesting the issue. There are a number of people who believe that the current copyright laws are unfair and unduly restrict the public's access to information.

The National Research Council's *Realizing the Information Future: The Internet and Beyond* (ISBN 0-309-05044-8) and a government task force report last summer both came to the conclusion that there was a problem here. As I remember, the task force recommended new rules (read: laws) to fix the problem. I'm sure that new rules would be a great relief to th copyright owners. What we need is some read-once bits, or at least transfer-once bits. If yo know how to do that, let me know, and we ca go find a venture capitalist together.

The whole issue of copyright protecti over the fabled Information Superhighway i major inhibiting factor to the development information repositories and services. It w remain so until the providers of such infor tion feel assured that their rights are som protected.

Disclaimer: From Anne Marie Countie speak my own truth, not Harvard's Veritas

---

Bradner is a consultant with Harvard Uni Office of Information Technology. H reached via the Internet at sob@ He shares this space with Dan Min column will app

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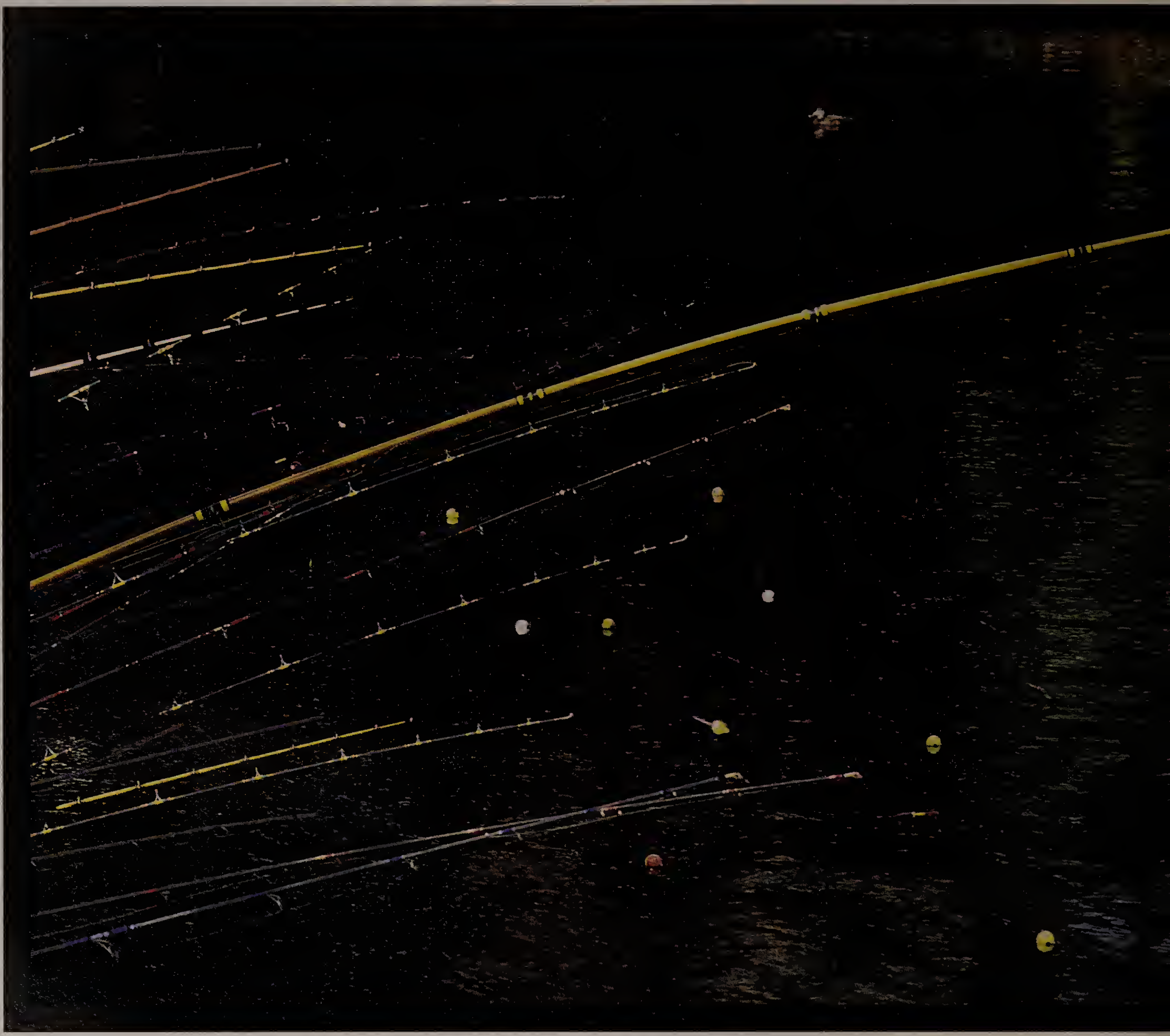
Circle Reader Service #71



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Circle Reader Service #**49**

Cisco pushes further into SNA arena with remote access gear

BY JIM DUFFY

San Jose, Calif.

Cisco Systems, Inc. last week announced remote access devices that support three methods for transmitting IBM Systems Network Architecture traffic over frame relay nets.

The new access gear is part of a broad Cisco initiative to maintain dominance in the SNA/LAN integration arena by taking its proprietary IBM internetworking code into the standards realm. Cisco owns better than 67% of the $401.2 million SNA internetworking market, according to International Data Corp. in Framingham, Mass.

Cisco hopes to build on that with the new access gear and with DLSw+, software that combines Cisco's Remote Source Route Bridging (RSRB) technology with the Data Link Switching standard for tunneling SNA through IP nets (*NW*, Nov. 7, page 1).

The access devices announced last week are the 2501CF and the 2502CF. Both include two serial ports, 2M bytes of flash memory and 2M bytes of random-access memory. They are targeted at sites migrating from Synchronous Data Link Control lines to frame relay links.

Both devices support the IETF's RFC 1490, which defines how multiprotocol traffic should run over frame relay links and how frame relay devices can interoperate. With these devices, Cisco is offering users three options for transporting SNA over frame relay.

The first is a direct Layer 2 router-to-front-end processor (FEP) connection using RFC 1490 encapsulation of SNA, which enables the 2501CF or 2502CF to communicate with an RFC 1490-equipped FEP without going through another router at the FEP site. It also obviates the need to upgrade 3174 controllers with frame relay interfaces, Cisco said.

This approach requires one frame relay permanent virtual circuit (PVC) per SNA session.

The second approach is RSRB encapsulation based on RFC 1490, which obviates the need to upgrade the FEP or controller to support RFC 1490.

This option provides increased functionality as compared to basic source route bridging because it reduces explorer frame broadcasts and network hops while providing SNA prioritization through Cisco's custom queuing feature. It also lowers frame relay charges because a single PVC can accommodate all SNA sessions, the company said.

The third approach is to encapsulate SNA in IP using Cisco's RSRB and DLSw+ software. This provides enhanced availability through local session acknowledgment and rerouting around failed links without session loss, Cisco said. It also provides scalability for fully meshed, multiprotocol networks.

Reality ✓ Check

Product: DLSw+
Company: Cisco Systems, Inc.

The benefits:
- Enables establishment of peer groups for enhanced scalability.
- Features Cisco custom queuing for prioritization and bandwidth management.

The drawbacks:
- Peer groups and custom queuing cannot be used when mixing DLSw+ with DLSw implementations from other router vendors.

The user view:
"DLSw+ will eliminate a lot of NETBIOS explorer frames, which will help our environment a lot."
Albert Tseng, systems programmer, Southern California Gas Co.

RFC 1490 will not be exclusive to the 2501CF and 2502CF frame relay devices; it will be extended to Cisco's 2500 and 4000 routers, and to the packet switching software option for Cisco's 7000 and AGS+ routers as a standard feature.

Analysts said Cisco is bringing its toys to IBM's sandbox. "SNA users have been looking for solutions for a while now in terms of integrating their increasing LAN traffic into their environment," said Skip MacAskill, senior research analyst at Gartner Group, Inc. in Stamford, Conn. "It's a case where Cisco is drawing that proverbial line in the sand."

The 2501CF costs $1,795, and the 2502CF is priced at $2,295. Both are available now.

©Cisco: (408) 526-4000.

Multimedia awaits Internet routing, transport standards

BY ELLEN MESSMER

Washington, D.C.

The Internet Engineering Task Force (IETF), the group responsible for developing the TCP/IP suite of standards, is working on a new set of routing and transport standards to improve multimedia conferencing.

Bandwidth-hungry applications such as data collaboration and packet-based desktop video can suffer performance problems when they ride on router networks not designed for such time-sensitive applications. But IETF working groups now have a number of draft network standards on the drawing board intended to improve support for multimedia through bandwidth reservation and more efficient use of multicast.

Through multicasting, users can send duplicates of messages or set up multiple one-way broadcast video and data collaboration conferences with many users on the receiving end simultaneously. Duplication of the transmission is performed in the receiving router, which uses its routing tables to determine recipient addresses.

An existing IETF standard, the Distance Vector Multicast Routing Protocol (DVMRP), works fine as a multicast routing algorithm in the Internet's Multicast Backbone Network, used to transport live video feeds

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☐ 2,500 - 4,999 ☐ 5,000 - 9,999 ☐ Over 10,000

2. What is your role in the purchasing decision?

☐ Approve ☐ Evaluate/Recommend
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to workstations that support IP Multicast.

But DVMRP works by flooding all available routes with a broadcast message, an inefficient method that can only be justified in a bandwidth-rich net.

A new protocol under development called Protocol Independent Multicast (PIM) avoids this through the designation of so-called rendezvous points for registration of both the senders and receivers of multimedia multicasts.

"It's protocol-independent, so it will work with any unicast routing protocol," said Steve Deering, member of the technical staff at Xerox PARC in Palo Alto, Calif.

Although PIM is only a draft standard, Cisco Systems, Inc. has already pledged support for it, he said.

IETF multimedia status report

ReSerVation Protocol: **Internet draft**

Real-Time Transport Protocol: **Internet draft**

Protocol Independent Multicast: **Internet draft**

IP Multicast: **Completed in 1989 (RFC 1112)**

Streaming II: **Completed in 1991 (RFC 1190)**

A transport standard in the works called the Real-Time Transport Protocol would put a time stamp and content identification label on each multimedia packet so the proper sequence could be recreated on the receiving end using a delay buffer.

Other Internet standards are intended to provide bandwidth reservation for multimedia traffic.

Streaming II (ST-II), a connection-oriented routing protocol developed by Bolt, Beranek and Newman, Inc. (BBN) for the Department of Defense, became an IETF standard in 1991.

ST-II host and router software, now used in a 600-node Defense Department network, lets the originator control bandwidth and latency in an interactive or multicast videoconference. ST-II, which is also known as IP Version 5, has been largely ignored outside the military. Wellfleet Communications, Inc. intends to ship routers supporting ST-II in early 1995.

But a revised version, called ST-II +, was issued last month as an Internet draft by the IETF's ST-II Working Group, whose primary champions include BBN, IBM, Wellfleet, Syzygy Communications, Inc. and the Defense Information Systems Agency.

ST-II + provides faster connection setup, with an option for allowing both receivers and senders to join a multicast group without needing approval from a central conference administrator.

"Unfortunately, it's not backward-compatible with ST-II," said Steve Jackowski, chief technical officer at Syzygy.

A somewhat competing technical effort to ST-II has sprung up in the IETF called the ReSerVation Protocol (RSVP). Implemented in host and router software, RSVP offers a way to guarantee bandwidth allocation on connectionless networks. It is protocol-independent and works over ISDN and private network connections.

Now a draft IETF standard, RSVP decentralizes control over bandwidth decisions, letting each desktop user decide how much bandwidth is needed to participate in a real-time multimedia conference. Unlike ST-II, the RSVP user can also join the conference without notifying any central authority, although not everyone considers that a good thing.

"If someone else on a LAN joins with RSVP, it can cause the whole conference to come down. It's also less secure," Jackowski said.

There is discussion underway to create a Joint Working Group to combine the ST-II and RSVP efforts — if only to create a common Management Information Base for both, he said.

Users give Digital high marks for its ATM gear

BY MICHAEL CSENGER

Maynard, Mass.

With more than two dozen early versions already installed, Digital Equipment Corp. today will formally announce availability of its local-area ATM switch and workstation adapter card.

The GigaSwitch/ATM System, known earlier as the AN2, is a 10.4G bit/sec Asynchronous Transfer Mode LAN and workgroup switch with 14 slots that support as many as 52 ports at 155M bit/sec each. Key to its design is a traffic management system called FlowMaster, which uses a credit-based algorithm for end-to-end flow control across the ATM network.

The ATMworks 750 Network Interface Adapter is a 155M bit/sec adapter card for the Digital 3000 AXP workstation. FlowMaster is implemented on the ATMworks 750 card, as well, which helps to reduce network congestion by throttling traffic back at its very source.

"With FlowMaster, we guarantee no cell loss due to congestion," said Jim Kuenzel, Digital's GigaSwitch/ATM development manager.

Users of the AN2 prototype agreed with Digital's claims that its equipment offers the highest throughput on the ATM market, but noted that other devices in the network can cause bottlenecks.

"On a 155M bit/sec link, the theoretical payload is around 134.5M bit/sec with ATM overhead, and we're running at over 128M bit/sec with the Digital equipment," said Derek McKearney, a consulting engineer at Elsag Bailey Process Automation, Inc. in Cleveland, Ohio.

Elsag Bailey has conducted ATM tests for more than five months, evaluating many vendors. While unwilling to provide their names, McKearney said many ATM systems proved ineffective, getting only 40M to 50M bit/sec on a 155M bit/sec link.

The University of Miami's Rosentiel School of Marine and Atmospheric Science is another early GigaSwitch/ATM user. Three Digital workstations equipped with ATMworks 750 adapters are connected to a single GigaSwitch/ATM, which, in turn, is connected to the wide-area through a Fore Systems, Inc. ASX-100 ATM switch.

See **Digital**, *page 29*

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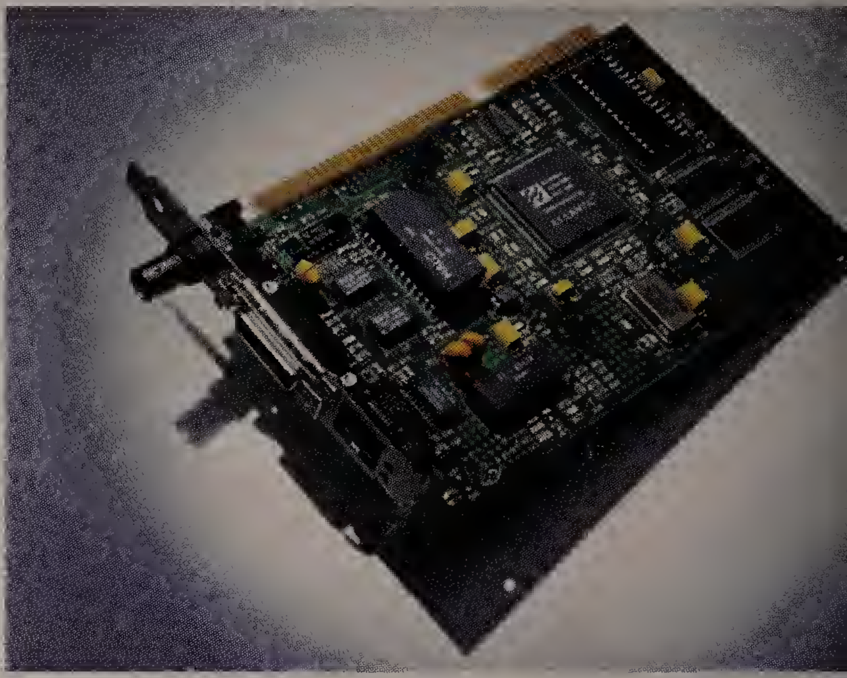

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Xerox intros enterprise print server

BY JODI COHEN

Phoenix

Xerox Corp. last week announced at the Xplor International Conference here a print server that allows MVS mainframes to tap into printer resources scattered across enterprise networks.

Xerox Print Services Manager (XPSM) is designed as middleware for client/server networks, with components residing on clients, servers and printers.

XPSM will manage printing from multiple MVS hosts as well as schedule and route jobs to multiple printers. The first version of XPSM runs on IBM's RISC System/6000 and links MVS mainframes with Xerox production printers. The server supports Synchronous Data Link Control, Token-Ring and TCP/IP connectivity between the client and server, allowing the server and attached printers to be located anywhere in the enterprise.

The server, which only supports Xerox Intelligent Printing Systems, provides tools for automated printer management.

XPSM can be configured, for example, to print jobs based on priorities. Or it can balance work loads by assigning jobs to the first available printer. Since XPSM provides management and control of queued jobs at the server, users can make changes such as job priority or number of pages without resending data from the host. The product also simplifies control of remote printers by allowing print jobs to be started, stopped and canceled from the RS/6000.

> **"If you have an MVS mainframe, you absolutely want to take advantage of the resources on the net."**

According to Dave Passmore, president of Decisis, Inc. in Herndon, Va., a product like XPSM makes sense for organizations because increasingly printers are found sitting on LANs.

"If you have an MVS mainframe, you absolutely want to be able to take advantage of the resources on the network — including Adobe [Systems, Inc.] PostScript printing," Passmore said.

Xerox is also offering optional software modules such as the Xerox Print Resources Manager, which enables the server to store resources including fonts, forms, page definitions and images. Another option is the Xerox Print Accounting Manager, an accounting module that collects data from a printer and its server for billing and chargebacks. Expected in late 1995, Xerox Print View Manager will be offered as a viewing facility for accessing information in production print files and displaying it on a personal computer screen.

Leonard Brinson, information systems manager for Prudential Insurance and Financial Services, uses a specially designed version of XPSM on an IBM Application System/400. He said the product allows him to send to any printer, which provides a significant cost savings.

"Our original structure would have required us to purchase Xerox 4532 printers, which go for about $37,000. Now we can buy a [Hewlett-Packard Co. Printer Control Language 5] printer from anywhere between $2,000 to $11,000 and print that same stuff," Brinson said. "I am not restricted by a device; I can determine where I want the information to go."

Pricing for the XPSM and an MVS client component starts at $25,900 and will be available in the first quarter of 1995.

☎Xerox: (800) 275-9376.

Digital

Continued from page 26

The university uses its ATM LAN for atmospheric studies. Working in parallel and coordinated by a Silicon Graphics, Inc. SGI Challenge server, the three workstations process 15G to 20G bytes of data every day.

Some of the resulting output is then shared over a 45M bit/sec T-3 WAN provided by the Washington, D.C.-based Naval Research Laboratory, which is also connected by T-3 lines to Oregon State University in Corvallis.

Digital's ATM switch and adapter cards can provide wire-speed throughput, but the workstations themselves cannot handle more than 45M bit/sec file transfers, said Peter Evans, a research associate at the University of Miami lab. "File support across the workstations is our limiting factor," he said.

And because it is proprietary, Digital's and every other vendor's traffic management scheme breaks down across WAN or multivendor links. "You get bottlenecks at any network interface," he said.

Digital's Kuenzel said the GigaSwitch/ATM will be upgraded to standards-compliant rate-based flow control when specifications are finished by the ATM Forum next year.

With delivery in 90 days, the GigaSwitch/ATM starts at $25,740. A fully configured switch costs about $2,600 per port. The ATMworks 750 adapter costs $2,499.

☎Digital: (508) 493-5111.

Memorex

Continued from page 18

token-ring LANs. It also supports an LLC2-to-LLC2 gateway feature that lets Ethernet and token-ring stations linked to the same 1174 exchange data without requiring a separate gateway.

The new software also supports access to SNA resources for clients using Digital Equipment Corp.'s Local Area Transport, TCP/IP telnet and Novell IPX protocols.

"We saved money because the new gateway features in Generation C let us run TCP/IP and IPX over our existing token rings without additional gateway boxes," said Roland Silvis, manager of communications at J&L Specialty Steel, Inc., a stainless steel manufacturer in Louisville, Ohio. "Right out of one controller, we now support SNA and multiprotocol LAN traffic."

All of the new products are available now. The 9301 starts at $9,000, the 9341 at $9,500 and the 9341 at $12,250. The 1174-15 starts at $8,889 and the 1174-25 at $8,379. Generation C sells for $895.

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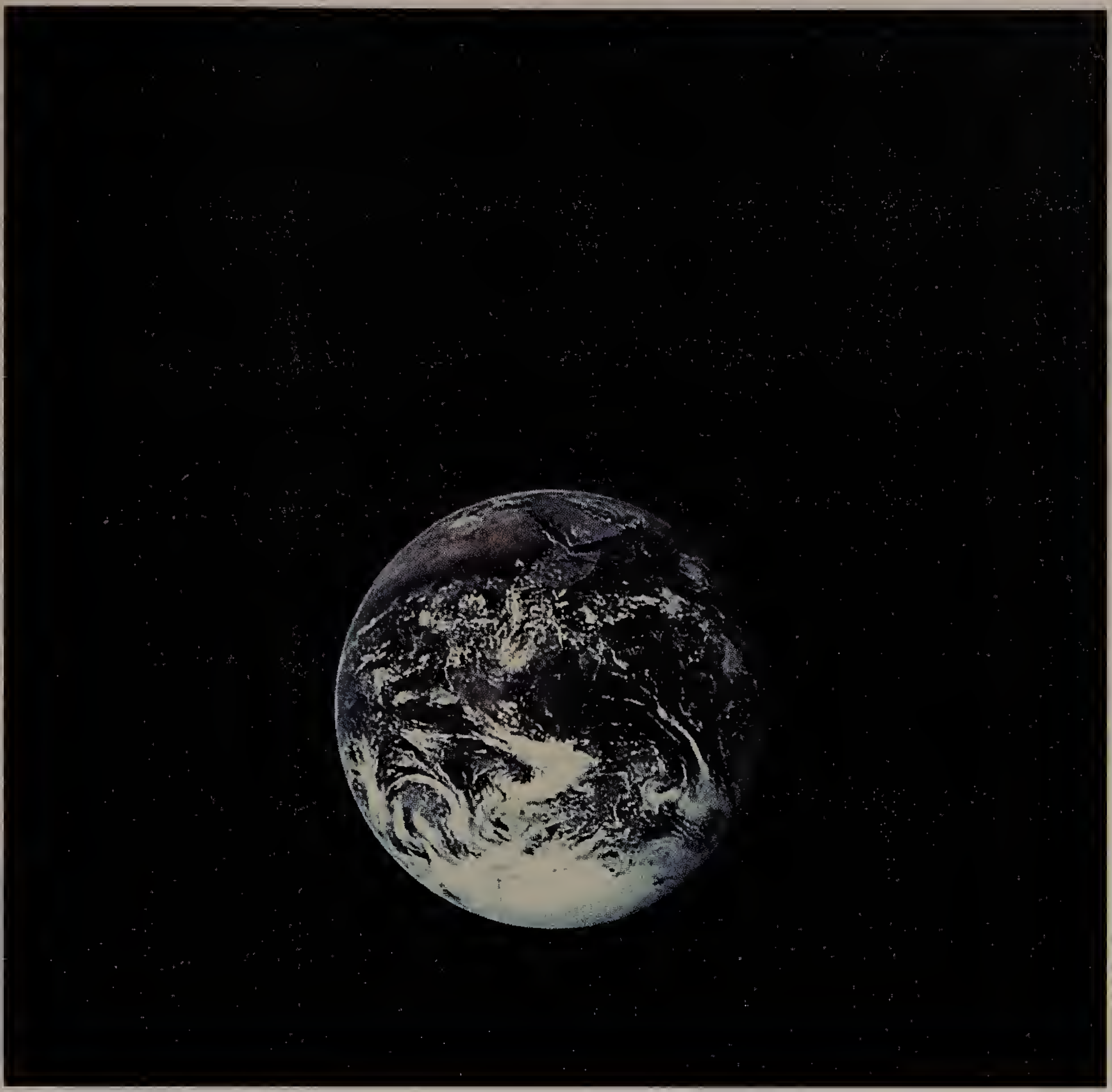

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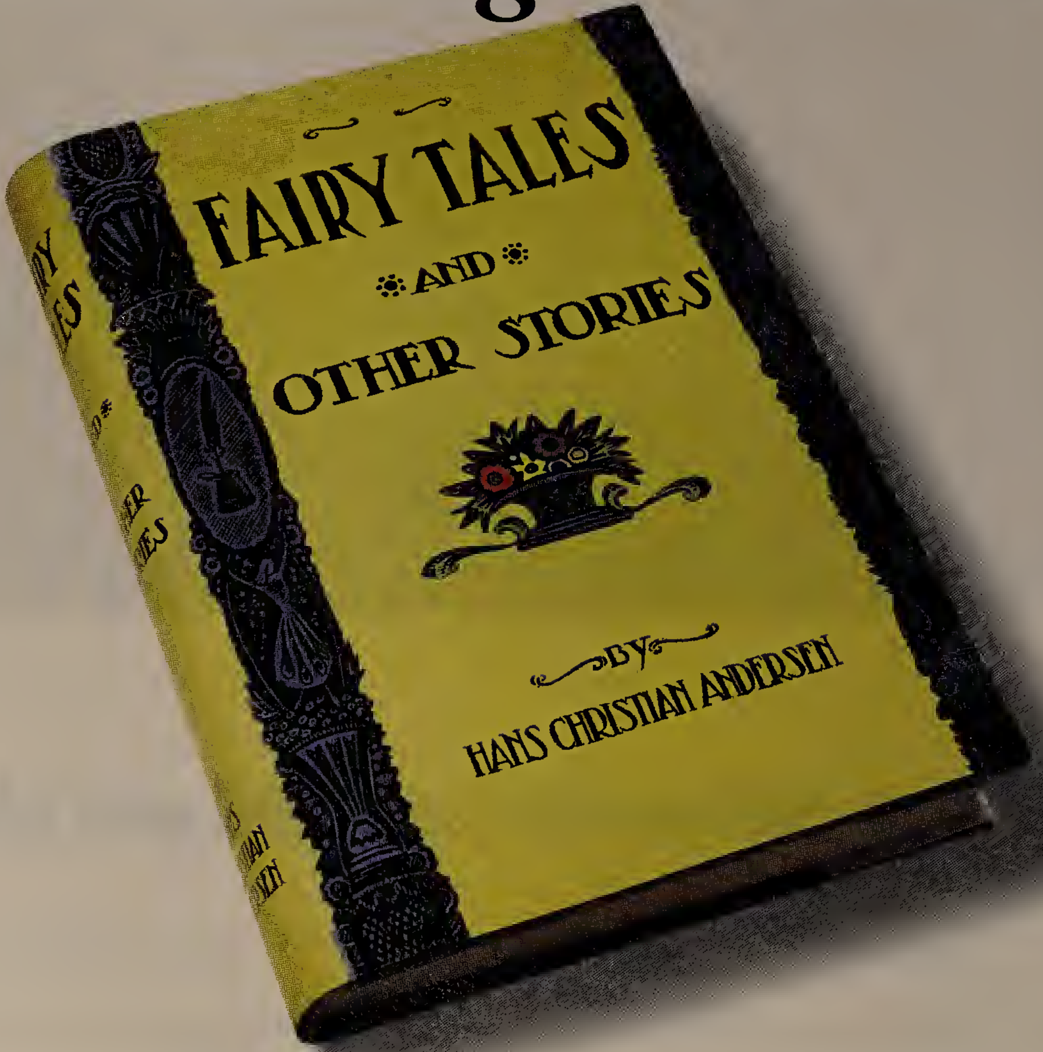

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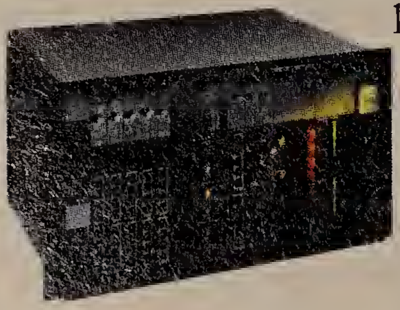

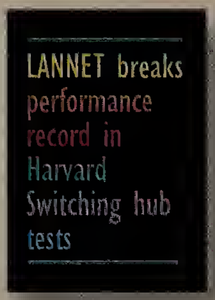

LANNET breaks performance record in Harvard Switching hub tests

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LOCAL NETWORKS

Operating Systems, Management, Hubs, Adapters and Other Equipment

Lexmark, HP pump out network printer offerings

BY PEGGY WATT

A variety of vendors, including IBM spin-off Lexmark International, Inc., Hewlett-Packard Co. and NEC Corp., have announced new products designed to help companies provide better printer services to network users.

Lexmark, based in Lexington, Ky., released the Optra family of laser printers, including high-end models that print up to 1,200 dots per inch and are specifically designed for high-volume LAN use.

The five new printers each have two network adapter slots and can connect simultaneously to multiple networks, including Apple Computer, Inc.'s AppleTalk, Novell, Inc.'s NetWare, Microsoft Corp.'s LAN Manager and IBM's Application System/400-based LANs. Support for Windows NT and IBM LAN Server will be added next year, said Don Wright, a Lexmark program manager.

The Optra Lxi comes network-ready, configured with an Ethernet adapter, 8M bytes of memory and a large paper tray. The Optra L and Lx have larger paper capacities and longer duty cycles than standard laser printers to suit them for network use, while the Optra R and Optra Rx are designed for workgroups producing lower volumes of printing.

All of the printers can be managed using Lexmark's MarkVision software, which gives users at any workstation on a LAN an ongoing report on the status of printing jobs, font information, printer options and paper availability.

Robert Fennell, a principal analyst for printer services at Dataquest, Inc. in San Jose, Calif., said, "It's a tremendous advantage for the LAN manager to have a real-time representation of the control panel of your printers right at your workstation."

Lexmark also introduced the MarkNet XLe family of network print servers, which work with printers from Lexmark and other vendors.

PRINTER PARADE

In other printer news, laser printer market leader HP announced it is supplying a version of its HP JetAdmin network printing utility to be bundled into Microsoft Corp. Windows 95, which is scheduled to ship next year.

See **Printer**, *page 35*

Cabletron stacks up new hubs

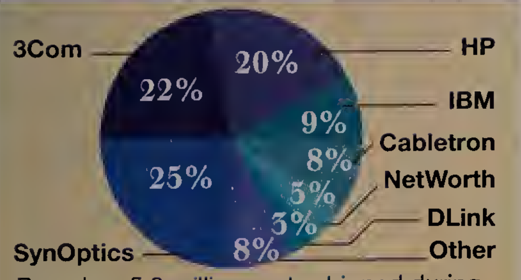
BY MARGARET DORNBUSCH

Rochester, N.Y.

Cabletron Systems, Inc. last week rolled out three manageable token-ring stackable hubs designed to let companies better tie remote LANs into corporate backbones based on Systems Network Architecture and other technologies.

The MicroMMAC-T hub comes in a 12-port base configuration but contains an extra slot that can be filled with a daughtercard that supports either another 12 ports or with an SNA/WAN integration module, the Micro SNA Controller (MicroSNAC). The MicroSNAC, based on technology from Sync Research, features a local SNA device port and a WAN port that supports frame relay access. The hub also supports the Remote Monitoring (RMON) protocol, which enables the device to be managed from a central location.

Worldwide stackable hub market



Based on 5.3 million ports shipped during first half of 1994.

SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

It is the RMON support that has made the MicroMMAC-T attractive to Holiday Inn for its European sites, most of which support small LANs, said Ed Boggs, senior net analyst with Holiday Inn/Rescom in Alpharetta, Ga. RMON support allows hubs to poll LAN devices locally and transmit only significant alerts over frame relay or very small aperture terminal WAN links, he said. Polling directly via the Simple Network Management Protocol across the WAN links is impractical, he said.

Two additional stackable token-ring hubs, the STH and STHi, round out Cabletron's announcements. The unmanaged STH Stackable Hub supports 12 or 24 active token-ring ports of either unshielded or shielded twisted-pair wiring. The STHi is an SNMP-compliant version of the STH hub. The STH and STHi hubs can be star-wired to the MicroMMAC-T to provide up to 120 active ports.

The Cabletron MicroMMAC-T hub will be available within 90 days starting at $6,795. The MicroSNAC module will cost $4,750. The STH and STHi hubs start at $3,795.

©Cabletron: (603) 332-9400.

Novell reshuffles to gain focus

New divisions to take aim at pervasive computing.

BY KEVIN FOGARTY

Orem, Utah

Novell, Inc. is reorganizing its business into smaller, more tightly focused groups aimed at fulfilling the company's pervasive computing strategy.

The reorganization into four separate product groups — each of which has profit-and-loss responsibility and reports directly to Chief Executive Officer Robert Frankenberg — comes as no surprise. It is actually the formalization of some revamping that has been going on since the venerable Ray Noorda handed over the reins to Frankenberg last spring.

The 4 faces of Novell

Group	Leader	Products
Information Access and Management Group	Steve Markman	Connectivity products, including LAN WorkPlace, NetWare for SAA, Novell Distributed Management Services and NetWare Telephony Services
NetWare Systems Group	Richard King	NetWare, AppWare and NetWare Embedded Systems Technology
UnixWare Systems Group	Mike DeFazio	UnixWare and Tuxedo
WordPerfect, the Novell Applications Group	Ad Rietveld	PerfectOffice, Windows applications, Envoy, InForms and SoftSolutions

GRAPHIC BY TERRI MITCHELL

But such a move often indicates that a company is struggling to solve some major problems, said Robert Sakakeeny, an analyst with the Boston-based consultancy Aberdeen Group, Inc.

Novell's inability to generate much momentum for strategic products such as NetWare 4 and UnixWare may indicate that the company has become somewhat out of touch with user needs, Sakakeeny said. Reorganizing may or may not address this, he said.

Novell's four business groups under the restructuring are as follows:

■ The Information Access and Management Group (IAMG) — The San Jose, Calif., unit will handle interconnectivity products such as Novell's Systems Network Architecture connectivity offerings, net management software, computer-integrated telephony wares and wide-area routing products.

These products had been managed by separate groups.

■ The NetWare Systems Group (NSG) — This Provo, Utah, group will be responsible for NetWare development and AppWare development tools.

■ The UnixWare Systems Group (USG) — Based in Summit, N.J., this organization will continue to push the development of UnixWare as well as oversee the Tuxedo transaction processing monitor product.

■ WordPerfect, the Novell Applications Group (NAG) — Evolved from Novell's purchase of WordPerfect Corp., this group will handle the PerfectOffice desktop suite and groupware products.

Novell also said it will set up boundaries between its new business units so third parties can form development agreements with one division without worrying about unfair competition from another Novell division.

The company did not say what those boundaries would be. However, according to analysts, it is obvious that part of the announcement is a clear shot at Microsoft Corp., which has been accused of competing unfairly in the applications market with information it gathers from its operating systems business. ◪

BRIEFS

Tally Systems Corp. last week announced that its server-based **inventory management** package has entered the beta-testing phase. NetCensus SMS Advanced Software Recognition Module, which tracks hardware and software components on networked and stand-alone workstations, operates in conjunction with Microsoft Corp. Systems Management Server and complies with the Desktop Management Task Force's Desktop Management Interface. NetCensus will be available in 1995; pricing has not been determined.

Tally: (603) 643-1300.

Novell, Inc. has extended its offer to give a five-user pack of its **GroupWise groupware** application to users upgrading to NetWare 3.12 or 4.02 for a network supporting 10 or more users. Originally slated to end Oct. 31, the offer will continue through the end of the year. GroupWise includes electronic mail, group scheduling, personal calendaring and task management capabilities.

Novell: (800) 638-9273.

Lanworks Technologies, Inc. of Mississauga, Ontario, will announce at Comdex/Fall 94 this week a utility to save workstation resources by letting IBM OS/2 desktops boot using files stored on a Novell, Inc. **NetWare** server. BootwarePlus for OS/2 resides on a workstation's Ethernet or token-ring LAN adapter, communicating natively to a NetWare server and booting from OS/2 system files residing there. That saves disk space at the client and makes updating OS/2 files easier because they reside at a central site. The list price is $79.

Lanworks: (905) 238-5528.

Accton Technology Corp. has announced that its EtherDuo-16UNX MultiPacket Accelerator **Ethernet adapter** has been certified as NetWare-ready by Novell, Inc. The EtherDuo-16UNX is priced starting at $79.

Accton: (408) 452-8900.

Fit to print

Product	Pricing	Availability
Lexmark's Optra laser printers	$1,749 to $3,699	Now
Lexmark's MarkNet XLe printer servers	$499 to $749	2 models now; 2 in December
HP's JetAdmin bundled into Windows 95	Bundled with Windows 95	When Windows 95 ships (sometime in 1995)
Destiny's WinStyler host printer option	Bundled with OEM printers	Later this month
Digital Product's NETPrint PowerMinder	$169	Now

Printer

Continued from page 34

HP JetAdmin provides a graphical central management utility for network administrators. Its icons show printers' status, including problems such as paper jams or units out of toner. It also provides configuration tools.

NEC Corp. will reveal new printers at Comdex this month that implement printer management technology from Destiny Technology Corp. of Santa Clara, Calif. Among the first NEC products to implement Destiny's WinStyler technology will be the Silent Writer SuperScript 610.

Destiny's WinStyler transfers many print management functions to a designated LAN workstation that has sufficient memory and processor resources to handle the image processing more efficiently than a laser printer. The software will run on Windows for Workgroups, Windows 3.1, Windows NT 3.5 and Windows 95.

"In a truly distributed environment, you could have the print job rasterized over various servers or workstations available on a network," Fennell said.

Digital Products, Inc. of Waltham, Mass. is now shipping NETPrint PowerMinder, a power module for its NETPrint line of network printer servers that shuts down idle printers to save energy and wear on the equipment. The unit includes a single AC connection and an RJ serial port, and can support two NETPrint printer servers.

Users specify the length of inactivity that triggers the timeout function, using accompanying Windows-based software called NSDOCTOR.

©Lexmark: (800) 891-0331; Hewlett-Packard: (800) 527-3753; Destiny: (408) 562-1000; NEC: (508) 264-8000; Digital Products: (617) 647-1234; GrayMatter: (206) 281-8800.

NET RESULTS

by Mark Gibbs

The net manager's test

At best, being a network manager is a hard and complex task. At worst, it requires the strength of Hercules and the patience of Job.

The trouble is that no matter how much you define what functions the technical support group should perform, the relentless march of technology will make your best laid plans obsolete.

For example, how can you plan for things like Cisco Systems, Inc.'s acquisition of Kalpana, Inc. or the emergence of a technology like OpenDoc?

Things like these may have you wondering just how you rate as a network manager in the ongoing struggle to build and maintain a support group.

So what you need is one of those quizzes — the kind you see in magazines such as *Cosmopolitan* — that tell you all about yourself. Most of these tests tend to be concerned with relationship issues, such as "Do You Have a Good Rapport with Your Dishwashing Liquid?" or "Can You Trust Your Husband to Buy Pizza?"

But here from the Gibbs Institute is an advanced psychometric profile test for net managers. Just add up the scores in parentheses as you go along.

1. What is the ratio of support staff to end users in your organization?

a. Support staff members have names like Jeeves and Crighton. (1)

b. There is at least one support engineer (SE) for every 50 end users. (2)

c. Have one SE, but he was last seen ripping handfuls of cable out of the wiring closet and crying "Get me a weed whacker for these snakes." (3)

2. How responsive is your staff to support calls?

a. Callers wait less than 30 seconds before talking to a highly skilled SE. (1)

b. The longest a caller waits for a callback is four hours. (2)

c. The backlog of callbacks will be handled by 2010 if no one else ever calls. (3)

3. What kind of network do you have?

a. Heterogeneous. (1)

b. Homogeneous. (2)

c. "Gee, that's a toughie. It's kinda big, and there's lotsa wires and, well, we got some PCs and..." (3)

4. What are your plans for ATM?

a. I plan to implement ATM as soon as possible. (1)

b. I am monitoring market developments and plan to implement ATM as soon as products stabilize. (2)

c. I already use ATM, like whenever I go out for pizza. (3)

5. What does your staff call you?

a. Mr., Ms. or some formal honorific. (1)

b. My first name. (2)

c. "Yo, dude." (3)

6. Do you get stressed?

a. Never. (1)

b. Sometimes. (2)

c. "Where's my Prozac?" (3)

Let's see how you did. If your score is:

0 to 6: You have a problem because you missed all or most of the questions. As a support manager this comprehension problem might serve you well, as you'll probably not get most of what's going on, thus limiting stress.

6: Either you're lying your butt off or you're a net.god.

7 to 12: You're a dedicated net manager who is probably underpaid, overworked and underappreciated. Pat your self on the back and ... oops, there goes your pager.

Get back to it — it's only 10 o'clock. At night.

13 to 15: You are a disaster waiting to happen. Start updating your resume.

16 to 18: You are a networking dolt. Your management ability is minimal, and your networking knowledge could be written on a postage stamp with enough room left over for the entire text of the NetWare manual set to be written out.

You will probably become CIO.

➥ Gibbs is a consultant and writer in Ventura, Calif. He can be reached at (800) 622-1108, Ext. 504, or on the Internet at mgibbs@rain.org.

Windows Connectivity Forum

New resource for Windows apps development

By Joel Diamond
Technical director
WUGNET
Windows User Group Network
76702.1023@CompuServe.com

For those of you looking for some help in building Windows applications, we've just opened a dedicated library and message special interest group (SIG) for you on the Windows Connectivity Forum (WINCON).

The NetAPI SIG, in WINCON Section 17, is designed to identify new C and Visual Basic tools for building Windows applications, to help forum members use those tools and to present technical white papers on relevant topics.

The SIG is moderated by David Warren, president of MMC, a northern California-based application development firm, and an expert in developing turnkey Windows networking applications for heterogeneous networks.

The SIG is also monitored by Windows User Group Network (WUGNET) Technical Associate Mark Gamber.

The new products that have shown up on the NetAPI SIG include:

■ Raindrop Software Corp.'s Open Mail System, which is a product for electronic mail-enabling Visual Basic applications. The tool will allow developers to add common mail tasks, such as logging on, sending mail and monitoring incoming mail, to applications.

Open Mail System eliminates the need for programmers to hard-code-specific E-mail code — such as Microsoft's Messaging Application Programming Interface — into applications.

An overview of Open Mail System is available under the file OMS-IN.WRI in the NetAPI library. Also, Raindrop can be reached on the forum by posting a message to "RainDrop" on the NetAPI section on WINCON.

■ Rolling Thunder Computing released ThunderNet, a Windows Dynamic Link Library (DLL) for C and C++ programmers in need of a painless way of programming Network Basic I/O System functions in their applications.

While ThunderNet is a not the first commercially available DLL, it is the first demonstration package we've seen on CompuServe for downloading. You can grab it from the NetAPI library as THUND.ZIP.

TO SHARE OR NOT TO SHARE

A common problem among network administrators is that they configure user directories with INI and GRP in the \Windows directory and then realize that several of the same DLLs appear in the shared Systems directory. If you move these DLLs out of the \Windows directory and into the \Windows\System shared directory, users will probably receive a common error message when starting up Windows, indicating that specific DLL files cannot be found.

So consider this advice: It is not recommended to move Windows system files from the \Windows to the \Windows\System directory. Since only system-related DLLs belong in the SYSTEM subdirectory, application DLLs should actually be stored in their application default directory.

HOT TOPIC: SPY SOFTWARE

WUGNET headquarters received an interesting message from a *Network World* reader asking for any information on shareware or commercial products (including hardware) that would allow one to spy on someone working on a computer over a network.

This sort of question always raises ethical issues, but the topic seems to be getting extremely popular on WINCON.

I am unaware of any vendor advertising its software as generic spy tools for Windows.

Have you used any such tools to determine an employee's productivity through measuring the duration of idle work times, typing speed or how long an application is loaded? Do you use tools to monitor employees' screen and file activities?

If you use such tools, how does your company deal with legal issues should employees object to such monitoring?

And finally, do any of you know of any public white paper documents, reports or even published articles that relate to this sensitive subject?

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To participate on the Windows Connectivity Forum, type **Go Wincon** at any **!** prompt on CompuServe. For those of you who are not CompuServe subscribers, *Network World* and the Windows Users Group Network are offering a free membership signup by calling (800) 524-3388. Ask for Operator 426.

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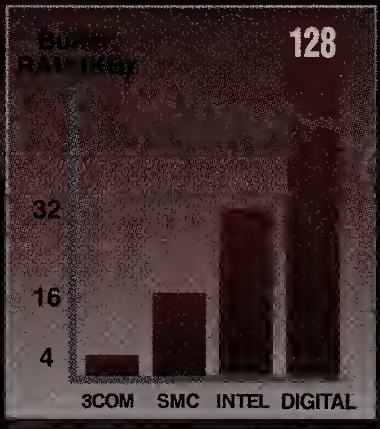

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BARRACUDA 2LP	2.1 GB	7200	8/9 MS	FAST WIDE/FAST SCSI-2
BARRACUDA 4	4.1 GB	7200	8/9 MS	FAST WIDE/FAST SCSI-2

From the Hawk models, you'll get the kind of price-performance that satisfies a variety of high capacity needs. With a Barracuda drive, you get the 7,200 rpm spindle speed worthy of the fastest networks and workstations. Both are proven reliability leaders, featuring Seagate's 5-year warranty. And both lines are designed with the common ASA-II architecture to maximize performance and ensure ease of migration.

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GLOBAL SERVICES

Voice and Data Services, Mobile Computing, Regulatory Issues and Voice CPE

Hughes gets tough, takes on the 'Net

BY JOANIE WEXLER

Las Vegas

Hughes Network Systems has devised a satellite-based broadcast service to rival the Internet in speed for desktop delivery of documents, video and software.

The company's 12M bit/sec DirecPC service, which will be demonstrated at this week's Comdex/Fall show here, is in a pilot test with IBM and other companies. The offering, aimed at the mass distribution of digital content at speeds faster than is possible via land lines, is scheduled to go on-line nationwide shortly after field trials end in January.

Hughes said DirecPC is capable of delivering 90M bytes of digital information per minute. By contrast, the same size file would take several hours using a 14.4K bit/sec modem for Internet connectivity, observers said.

Direct connections to the Internet, though, range from 56K to 1.5M bit/sec, and some go as high as 45M bit/sec.

Hughes is testing DirecPC with financial service houses for distributing multimedia information to desktops.

Hughes, as yet, does not have an exact pricing model. But businesses wishing to download digital content over the satellite network must invest $1,495 for a package containing a Ku-band satellite dish, a 24-inch antenna, coaxial cable to connect it to a personal computer and a 16-bit Industry Standard Architecture adapter card.

The subscribing firm will also pay a flat monthly charge of about $15.95, plus a usage charge based on the volume downloaded.

Kimball Brown, vice president of mobile computing at Dataquest, Inc. in San Jose, Calif., said the service seems optimized to help retailers manage software inventory by allowing them to quickly download programs for customers rather than keeping them in stock in stores. "But [buyers] usually want the packaging, documentation and the whole nine yards," which could be a marketing glitch.

IBM is already testing the service for distributing software updates to existing customers as well as for selling shrink-wrapped applications through kiosks (*NW*, Nov. 7, page 10).

Hughes is also testing DirecPC with financial service houses for distributing multimedia information, such as news and stock quotes, to desktops, said Thomas McPherson, vice president and general manager of DirecPC product development at Hughes.

Another application could be for companies changing the look of their sales materials. They could download collateral to desktop publishing systems in sales offices throughout the country, he said.

©Hughes: (301) 428-7113.

AirTouch leads cellular theft fight

Carriers getting serious about this emerging problem, taking proactive approach.

BY JOANIE WEXLER

Walnut Creek, Calif.

Companies ramping up with wireless technology can take heart that some carriers are finally getting serious about combatting cellular telephone fraud, which robs the industry of nearly half a billion dollars a year.

AirTouch Communications has become one of the first major cellular carriers to deploy a proactive fraud detection system across all the markets it serves. The company said it has taken extra precautions to protect users — and itself — from phone theft by integrating artificial intelligence-based software from Longmont, Colo.-based Coral Systems, Inc. into its network.

A day in the life

Every day in the U.S. cellular industry:

More than $1 million is lost to fraud.

Someone is apprehended for fraud.

There are 17,000 new subscribers.

SOURCE: CELLULAR TELECOMMUNICATIONS INDUSTRY ASSOCIATION, WASHINGTON, D.C.

The installation of such products in carrier nets to detect and thwart phone call thievery while it is in progress could go far in driving service costs down and raising the comfort level of telecommunications managers with the accuracy of their cellular phone bills, analysts said.

"We're past the stage where cell fraud is just intellectually popular; the criminal element has entered the game," said Ed Simonson, executive vice president of TeleDesign Management, Inc., a consultancy specializing in phone fraud issues. "The public doesn't want to pay anymore. If we could curb fraud, we could lower the cost of cellular calls."

AirTouch will deploy Coral's FraudBuster software, which uses a calling pattern recognition engine to spot anomalous calling behavior from a particular phone number and alert the carrier. It can also detect cell phone cloning by sensing if two calls are being made from the same phone number from different places, explained Tom Fedro, vice president of sales and marketing at Coral.

The software likewise identifies calls from so-called tumbler phones, devices sold on the black market that can support multiple fake phone and serial numbers. FraudBuster bars calls from these phones by quickly checking a Home Locator Register — a database of legitimate users — and cutting off calls from phone numbers not in the database.

AirTouch and Coral will integrate FraudBuster with TRW, Inc. radio fingerprinting software, which is able to identify each cellular

See **Theft**, *page 45*

Rockwell to pitch plain vanilla CTI at low price

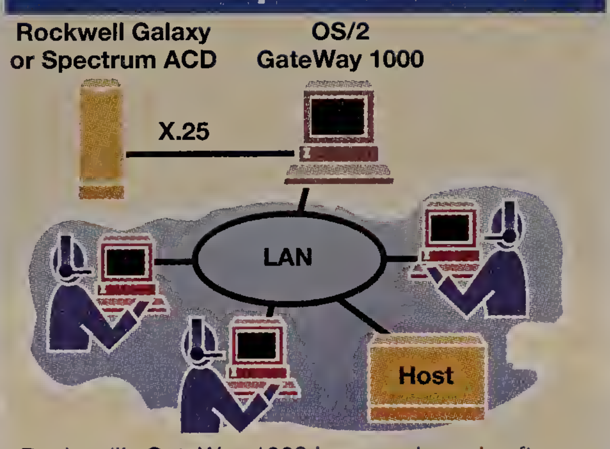
BY DAVID ROHDE

Atlanta

The leading maker of automatic call distributors (ACD) is preparing to offer call centers a relatively inexpensive way to get into computer-telephone integration (CTI).

Rockwell Switching Systems Division this month will announce GateWay 1000, OS/2-based software that turns 486- or Pentium-based personal computers into CTI servers on Ethernet or token-ring LANs.

Simplified CTI



Rockwell's GateWay 1000 is server-based software that offers an inexpensive and simple way to implement basic computer-telephone integration that requires no modification to host applications.

GRAPHIC BY SUSAN J. CHAMPENY

GateWay 1000 connects to a Rockwell ACD but does not require a connection to the host computer containing information about a call center's customers, as in classic CTI setups that cost $100,000 or more. While that makes the system simpler to set up, it also limits its functionality, especially in terms of host access for features such as customized call routing.

But the system does support Dialed Number Identification Service (DNIS) and automatic number identification, enabling it to populate an agent's screen with pertinent data based on the number called or the number from which the call was placed.

The system was previewed to Rockwell users and salespeople at the company's user group meeting here last month and is expected to ship by year end.

GateWay 1000 is designed to appeal to users of Rockwell's older Galaxy ACDs, often found in the same environments as legacy IBM systems.

In an IBM environment, each client workstation runs 3270 emulation software, enabling agents to access the host, said Andy Zazzera, general manager for Rockwell's CTI Systems Technologies Division.

Traditional CTI projects often take a long time to implement because they cause friction between telecommunications and information systems (IS) staffs, resulting in their fall to "No. 45 on the hit parade for the IS staff," he said.

By contrast, the design of GateWay 1000 means "there are no changes to the host," Zazzera said. "It removes any objections of the [IS] staff."

But it also means limited functionality.

The system does allow an agent to dial out from the PC if the telephone number is already on the screen.

Plus, it can take inbound telephone calls and populate the agent's screen with the cor-

See CTI, *page 43*

BRIEFS

AT&T, Bell Atlantic Corp. and **NYNEX Corp.** said last week that they have reached a pro-competitive settlement in the Bell Atlantic-NYNEX antitrust suit against the AT&T/**McCaw Cellular Communications, Inc.** merger. The suit was the only outstanding impediment to the merger.

While details of the resolution were skimpy, the firms said AT&T has made several commitments to accelerate its pursuit of open interfaces in its cellular network equipment.

Siemens Public Communications Network Group in Munich, Germany, has teamed with cable television equipment maker **Scientific-Atlanta, Inc.** and **Sun Microsystems, Inc.** to deliver a multimedia network architecture for **CATV** and telephone companies, the firms said last week. Siemens will serve as integrator, and Sun will contribute its video server technology.

NEC Technologies and **SkyTel Corp.** last week introduced the VersaPage Card for the SkyTel System, a PCMCIA card letting NEC notebook computers download messages and news directly from SkyTel's far-reaching paging network. SkyTel and **Toshiba America, Inc.** earlier this year announced a similar card for Toshiba portables.

RAM Mobile Data and **Nettech Systems** last week said they signed a deal enabling RAM to distribute Nettech's InstantRF Workbench family of **development tools.** The move is part of RAM's broader effort to embed a significant customer base ahead of arch-rival Cellular Digital Packet Data technology (*NW*, Nov. 7, page 1).

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RATE & TARIFF MONITOR

by Eric Paulak

ISDN finds a home... and at the right price

ISDN has long been maligned as undeliverable and without purpose. After all, though it has been 14 years since it was first introduced, service is still not readily available, and carriers still have their own pricing schemes.

But that's all about to change.

ISDN will be available to the majority of users during the first half of 1995. The Bell companies have started filing tariffs that make the service more affordable than dedicated lines or switched 56K/64K bit/sec services. And finally, the steady decline in the cost of videoconferencing equipment has led to a natural partnership between video applications and ISDN, giving ISDN the purpose it has lacked.

Currently, ISDN is available on about 75% of the lines in the country. Pacific Telesis has the best deployment at 86% saturation, and NYNEX has the worst at 50%. By the end of 1995, the nationwide percentage of lines that are ISDN-capable is expected to reach 80%.

To take care of the other 20%, the Bell companies are tariffing new services called ISDN Anywhere or Virtual ISDN. Under the services, if your serving wire center is not ISDN-capable, the Bell company will route you to the nearest wire center that is.

Of course, this comes at an added fee. NYNEX, for example has tariffed its Virtual ISDN for deployment in downstate New York starting in January at a cost of $10.00 a month.

And now that the prices for ISDN are starting to come down in comparison to other services, ISDN is an even better deal.

In Illinois, for example, Ameritech's Switched 56 service costs $55.36 a month for one line. Usage charges are 12 cents for the first minute and 1 cent for every minute thereafter.

A full ISDN Basic Rate Interface line — which gives you 128K bit/sec of usable bandwidth, plus 16K bit/sec of signaling bandwidth — costs just $37.41 per month.

Usage charges for voice traffic are 3.9 cents to 16.29 cents for the first minute and from 1 cent to 6.47 cents for every minute thereafter. Add an additional .5 cent a minute for data traffic. In Florida, the pricing's a bit different. A full ISDN BRI line costs $99.50 a month. That's more than twice what the Ameritech ISDN line costs, but BellSouth doesn't charge for usage. It's a flat rate of $99.50 a month, no matter how much you use the line.

Switched 56K bit/sec service in Florida costs $50.00 a line, and usage runs at 12 cents for the first minute and 10 cents for every minute thereafter.

With switched 56K/64K bit/sec services, however, you need two lines to equal one ISDN BRI line, so your costs double. In Illinois, two switched 56 lines cost $110.72 a month; in Florida, two lines cost $100.00 a month.

Why is ISDN suddenly catching on? Businesses have found a great new use for the service: videoconferencing.

Until recently, videoconferences were set up in actual videoconference rooms and transmitted over dedicated lines. These arrangements can cost hundreds of thousands of dollars, deterring many users from getting involved with videoconferencing.

However, rollabout video systems have brought the hardware costs down under $20,000, and transmission costs have been cut down with the advent of switched 56/64K bit/sec services. But switched 56/64's heyday is sure to be short-lived. Its availability is just as sparse as ISDN's, and, as shown above, it costs more than ISDN.

So if you've been looking for a less expensive way to transmit videoconferences, ISDN could be your answer. And even if you don't have an ISDN wire center near your office or home, you can still get ISDN service. It may cost a few bucks more per month, but it will more than pay for itself in comparison to other services.

➡ Paulak is associate publisher for the Center for Communications Management Information, a provider of rate and tariff information in Rockville, Md. He can be reached at (301) 816-8950, Ext. 327.

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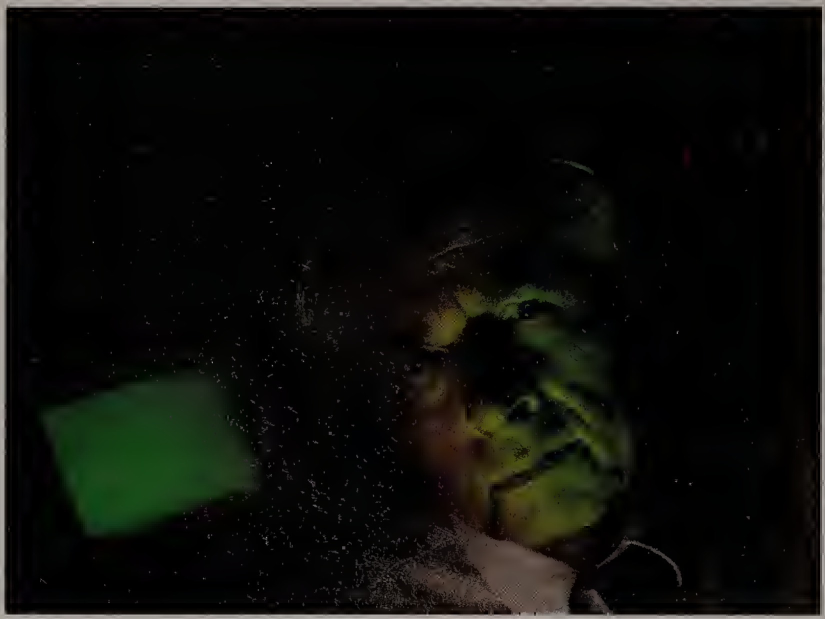

Bill Jones, MIS, age 38

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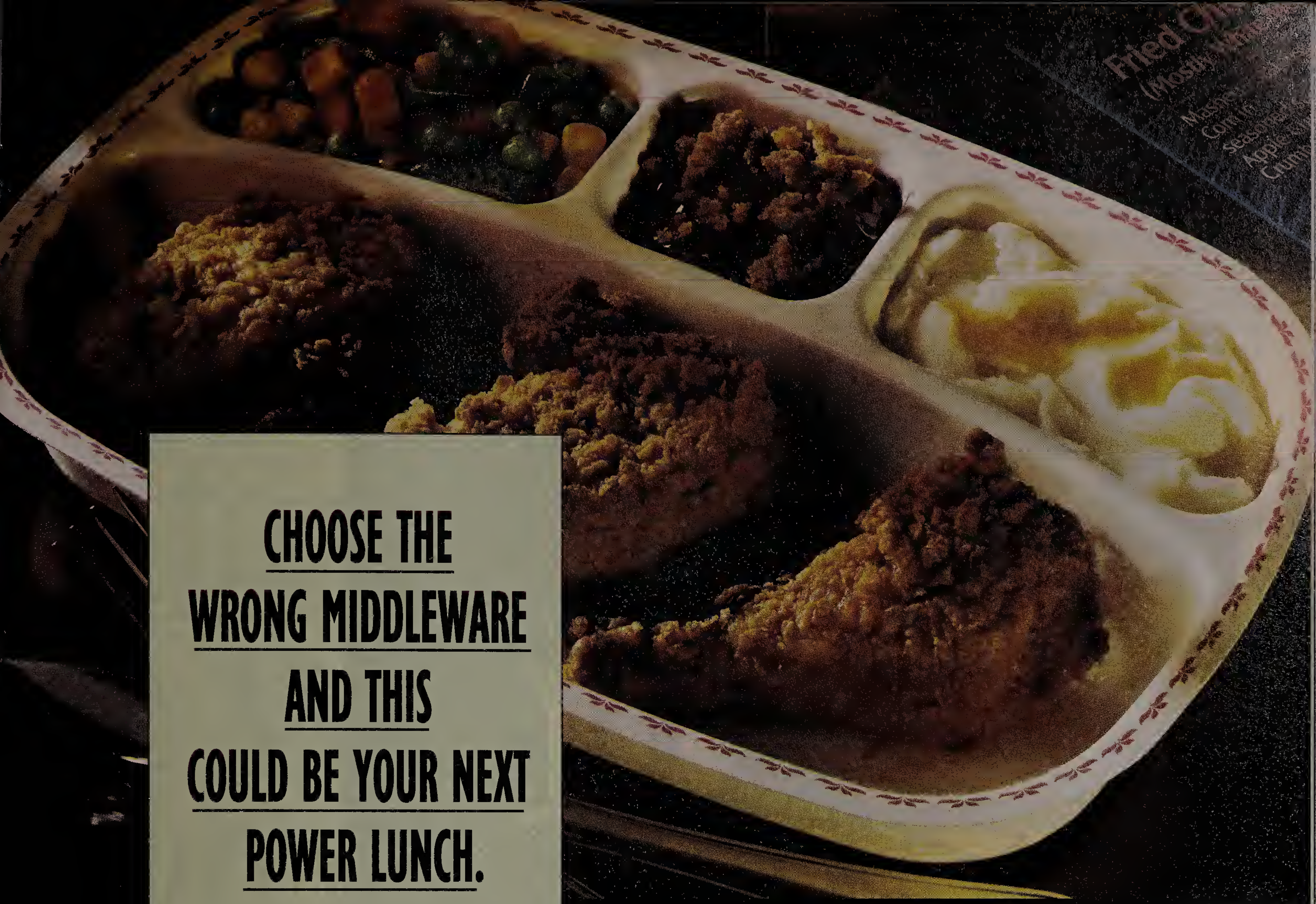

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Circle Reader Service **#64**

CTI

Continued from page 38

rect application based on ANI, DNIS or customer inputs prompted by voice response. Those applications, which may vary depending on which 800 number the customer called, for example, reside on the client PC.

But the system cannot consult a customer's account record and display it automatically on the agent's screen or use it to help decide which agent should get the call based on skill set or other factors, Zazzera said.

"GateWay won't do a lookup. The decision logic isn't there," he explained.

GateWay 1000 also lets users sign on or off both host and ACD sessions with a single command.

The product will initially support as many as 50 agents and cost less than $50,000, the company said.

Because Rockwell's CTI Systems Technologies Division is also set up as a systems integrator for non-Rockwell call centers, the company is developing GateWay 1000 links to other ACD platforms. Those are expected in the second half of 1995.

Voice messaging LAN pack adds call handling features

BY DAVID ROHDE

Washington, D.C.

Active Voice Corp. has released an enhancement to its TeLANophy voice messaging server that lets users make informed decisions on the spot about how to handle live incoming calls.

The new ViewCall feature adds to the point-and-click access for voice and fax messages included in the previously released ViewMail and ViewFax TeLANophy programs.

Under ViewCall, released at the recent Unicom '94 trade show here, a caller — after requesting the extension of the person to be reached — speaks his own name and can input other data such as phone or account number.

This information is passed to the user's Windows-based personal computer, enabling the person to click on a choice of voice response messages to send back to the caller.

For example, the caller may be told to wait since the person will available shortly, or asked to leave a message because the person is out of the office. Such responses can be set in advance.

TeLANophy is based on a voice messaging server that sits on a LAN and uses digital signal processing voice cards to take calls through a computer-telephone link with virtually any private branch exchange.

The server, known as Repartee, is an OS/2 system running on an Intel Corp. 486 or higher PC.

The company is working to provide support for AT&T and Novell, Inc.'s Telephony Services Application Program Interface, according to Helen Wright, product manager.

Eglin Air Force Base in Ft. Walton Beach, Fla., has about 800 users on TeLANophy, said Phil Block, a programmer/analyst with Management Consulting & Research, Inc., the base's telecommunications management firm.

He added that the system can be integrated with specific Windows applications. "I integrate it with ACT," Block said. The incoming telephone number references a specific ACT contact management record.

Block said the vendor is also working to provide support for Windows for Workgroups.

One limitation of ViewCall is that it does not work with direct-inward dial (DID) trunks, where users have their own telephone numbers. "Calls come directly to my desk before they hit voice mail," explained Joan Olendorf, manager of the office and information systems for the Greater Seattle Chamber of Commerce in Washington. She uses the other features of TeLANophy but cannot sign on to ViewCall because of the lack of DID support.

The company is working to provide DID support, Wright said, and to integrate the TeLANophy package with popular E-mail packages — such as cc:Mail and Microsoft Mail — in 1995, Wright said.

Reality ✓ Check

Product: ViewCall
Company: Active Voice Corp.

The benefits:

- Lets user decide how to handle each incoming call.
- Works with all PBX systems.
- Integrates with ViewMail and ViewFax.

The drawbacks:

- Does not work over DID trunks.
- Client PCs must operate under Windows.
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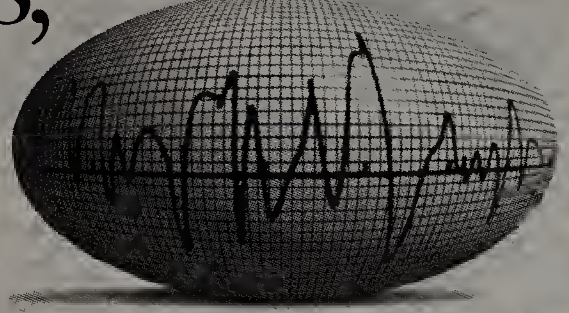

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ATM service test in store for JCPenney

BY JOANIE WEXLER

Dallas

JCPenney Company, Inc. is launching a technical trial to determine how applicable combining voice, data and video over high-speed Asynchronous Transfer Mode links is to the retail industry.

The company has teamed with carriers AT&T and Southwestern Bell Telephone Co. for the services portion of the network, which will carry images of JCPenney merchandise among three corporate sites.

Running at 155M bit/sec, the public nets will transport ATM cells that have been converted from Fiber Distributed Data Interface LAN frames by Cisco Systems, Inc. 7000 routers.

The trial is set to begin Feb. 1 and run for 45 days. AT&T, a key JCPenney supplier, was chosen even though the carrier has not yet announced a 155M bit/sec commercial ATM service.

MCI Communications Corp., another primary JCPenney carrier, has already announced a commercial 155M bit/sec ATM service (*NW*, Sept. 5, page 1), slated to come up late this year. But the carrier was reportedly not yet prepared to participate in a technical trial.

AT&T offers 45M bit/sec ATM service in 300 points of presence today and plans to roll out T-1 speed services in the second half of 1995, said Diana Woo, an AT&T ATM product manager. She said AT&T will offer 155M bit/sec services eventually, but the time frame will depend in large part on the JCPenney trial.

The retailer intends to test the benefits of ATM for transmitting catalog images, full-motion video, audio and data from a server in a JCPenney data center in Lenexa, Kan., to another data center in Dallas and corporate headquarters in Plano, Texas, said Richard Skinner, manager of communications and application development support at the company.

He hopes to discover what network efficiencies can be achieved by combining traffic on one network, as well as to test interoperability among different vendors' ATM services and equipment.

Skinner added, though, that the applications "are not real; they go away when the trial is over."

Woo said such trials will help the vendors and customers determine appropriate committed information rates, classes of service and connection types — virtual channel or virtual path — for different applications.

JCPenney, which has demonstrated a growing interest in electronic commerce, is already involved in about a half-dozen technical trials. These include a Bell Atlantic Corp.-led trial of a video-on-demand service for interactive home shopping involving Nordstrom, Inc. and Lands' End, Inc., set to go live with 1,000 customers starting this winter.

Theft

Continued from page 38

telephone's unique radio wave and, thus, whether calls made from a given phone number are legitimate.

"More carriers should take the position that [AirTouch] has so we can get rid of 85% or 90% of this problem," said Ron Bennett, a principal at The Bennett Group, a Cupertino, Calif., consulting firm specializing in cellular communications. "Not all are doing something proactive."

Bennett indicated that cellular fraud has become prevalent because carriers have been sluggish to make the up-front investment in protective software, which has been available for about two years.

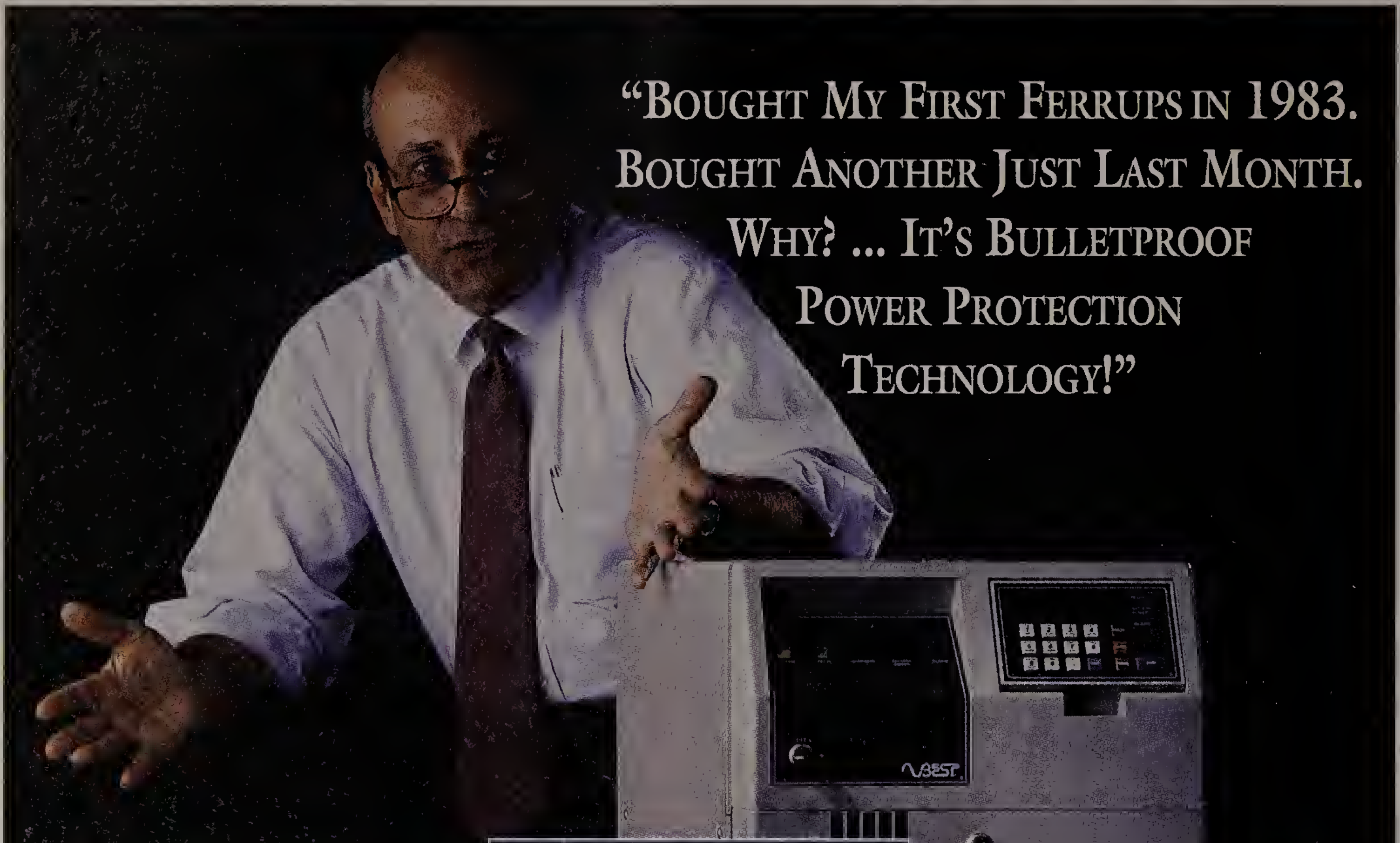
> **"Ideally, it should be a federal mandate as part of the issuance of a federal [wireless] license" to install fraud detection software.**

"Ideally, it should be a federal mandate as part of the issuance of a federal [wireless] license" to install fraud detection software, Bennett suggested.

FraudBuster will also work with emerging Cellular Digital Packet Data networks, Fedro said, since they are digital packet overlays to the analog cellular network.

Simonson pointed out, though, that the digital nature of emerging networks is in itself a deterrent to hackers, who find digital sign-ons much more challenging to circumvent that analog ones. "Once you deploy intelligence in the networks [via digital], you go a long way in fighting fraud," he said.

On the other hand, the hackers are already hot on the trail of developing ways to outwit digital networks, he warned.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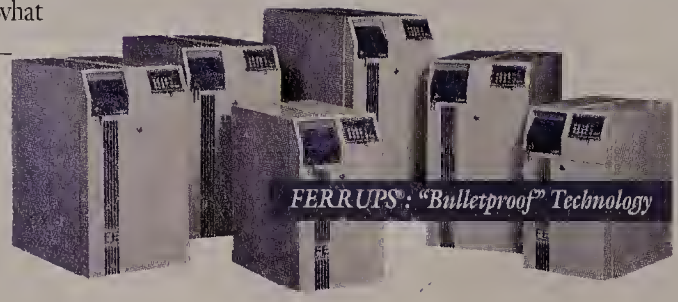

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*Circle Reader Service #***55**

Xircom extends mobile offerings with modem, software bundle

BY JOANIE WEXLER

Calabasas, Calif.

Wireless LAN adapter card maker Xircom, Inc. has moved outside the building and into the wide area with its support for mobile users.

Xircom has traditionally allowed Ethernet users with portable computers to roam within their buildings to conference rooms or other spots and still wirelessly hook into LANs. Now the company has extended that capability out onto the road — and across the ocean — by integrating cellular and wireline modem software onto an Ethernet PCMCIA adapter card.

Xircom is also providing users with the option of getting Traveling Software, Inc.'s LapLink for Windows bundled with its new CreditCard Ethernet+Modem II. LapLink for Windows provides mobile users with remote control and file transfer capabilities.

The whole package, LapLink for Windows and the new card with modem, costs $799.

Ed Dombek, information center manager at Trustmark Insurance Co. in Lake Forest, Ill., already uses LapLink with a wireless link from National Semiconductor Corp. that allows him to send data at distances up to 10 meters. But he said, "I'd like to go farther."

The bundling of software and wireless modem technology is something users need, said Iain Gillott, manager of wireless communications at Link Resources Corp., a consultancy in Framingham, Mass.

"Data is much different than cellular voice, where your vocal chords provide you with content to send over the link. You need applications with data," he said.

Today, most users assembling wireless data networks have to build them piecemeal, but efforts such as the Xircom-Traveling Software joint marketing agreement are starting to ramp up, Gillott said. Wireless Telecom, Inc., for instance, is bundling BellSouth Cellular phones and service with modems and software and selling the package via retail channels.

One potential knot in the Xircom-Traveling Software plan is that they do not have combined technical support. "I should be able to buy five [IBM] ThinkPads, software and network service from one place, and call one 800 number for technical assistance," Gillott said.

GOING ABROAD

Xircom's latest PCMCIA card also includes special features that allow the modem links to work internationally, despite the idiosyncrasies of various countries' telephone networks.

Each foreign carrier requires users to take a unique series of steps to get a dial tone. Xircom has put a menu system in its software so users can program in the de facto communications commands for the countries they travel in most often, explained Russ Sharer, director of client products at Xircom.

©Traveling Software: (206) 483-8088; Xircom: (800) 438-4526 or (818) 878-7600.

Motorola airs cellular-ready modem lineup

Motorola, Inc. has launched cellular-capable modems aimed at the retail and home-office market.

The new Lifestyle Series and the Power Series will begin with 14.4K bit/sec PCMCIA models that can be linked to Motorola's other retail offering, the MC^2 MicroTAC cellular telephones.

While Motorola avoided any direct comparisons, the move counters U.S. Robotics' recently proposed merger with Megahertz Corp. U.S. Robotics hopes to enter the mobile and cellular modem market with Megahertz's PCMCIA offerings.

Motorola's $279 Lifestyle Series is targeted at home computer users who don't require advanced features or capabilities. The $339 Power Series is for more demanding users. Both are V.32bis 14.4K bit/sec modems; the Power Series offers more security features, memory and upgradeability.

The Power Series is also cellular-ready, requiring no adapter to work with Motorola's MicroTAC flip-phones. For improved cellular performance, the Power Series uses Motorola's Enhanced Cellular Control (EC^2) cellular protocol.

"Instead of sending on a weak signal and then having to retransmit lost data, EC^2 looks for the good spots and sends only then," said Ray Wright, Motorola's director of product marketing. "So you save on retransmissions and . . . excess connect-time charges."

©Motorola: (800) 766-4883.

BY MICHAEL CSENGER

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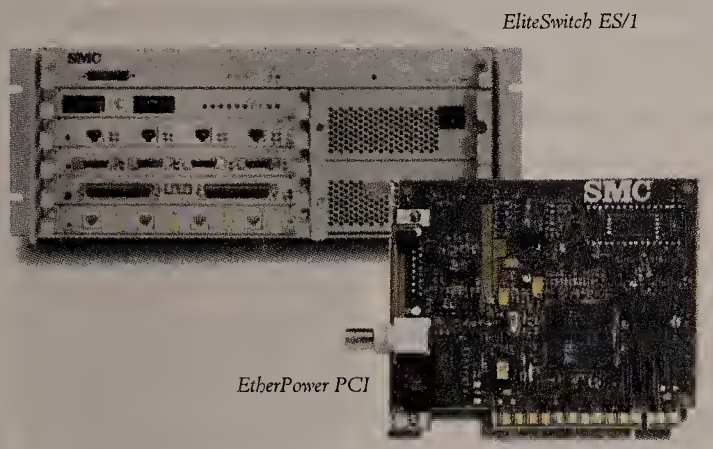

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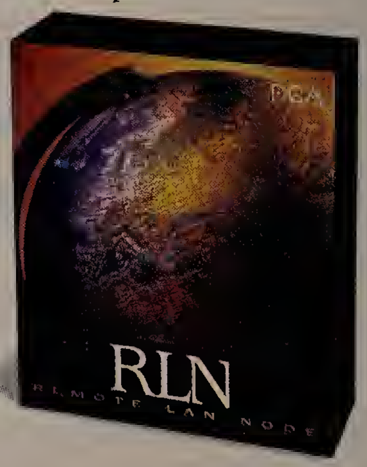

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Circle Reader Service **#46**

CLIENT/SERVER APPLICATIONS

Distributed Databases, Messaging, Groupware, Imaging and Multimedia

Database vendors moving in on data warehousing mart

BY BARB COLE

San Jose, Calif.

Consultants at Gartner Group, Inc. are advising clients to steer clear of proprietary databases designed for building data warehouses and executive information systems (EIS).

In a report to be issued soon, the market research firm encourages clients building such systems to look to traditional relational database vendors or to an emerging group of vendors selling products designed to work with mainline databases.

"Within three years, people will begin to throw out specialized databases and go with the relational vendors for data warehousing," said Kevin Strange, a Gartner Group analyst.

Data warehousing involves collecting data from various sources in a special database that end users can query with EIS and other decision support tools. A related technology, dubbed on-line analytical processing (OLAP), can be supported in a stand-alone database or work in conjunction with installed relational databases (*NW*, Nov. 7, page 12). Both data warehouses and OLAP systems store data in a less rigid format than do relational databases, allowing them to process queries faster.

NOT STANDING STILL

But relational database vendors are not standing still. They are improving the ability of their products to handle EIS applications through new support for parallel processing computers and larger amounts of data.

In addition, relational database vendors plan to speed their query-handling capabilities by implementing the same preindexing technology used in data warehousing products. Last month, Sybase, Inc. acquired such technology from Expressway Technologies, Inc.

"We're hearing from relational database companies that their databases will be extended to do data warehousing and OLAP, but we're hearing from data warehousing vendors that their products are best for

See **Vendors**, *page 55*

New standards help bridge gap between fax, messaging worlds

BY JODI COHEN

Vendors are just now starting to implement two facsimile standards that will help play a major role in the convergence of fax and messaging.

The International Computer Fax Association (ICFA), which has recently become an affiliate member of the Electronic Messaging Association, has developed over the past two years T.434, a binary file transfer standard, and T.30, a fax routing standard. Together, they offer new transport and routing capabilities that continue to blur the line between the fax and messaging arenas while promising cost, manpower and time savings in transmitting large documents and graphics files.

Many of the 40 ICFA members — including Brooktrout Technology, Inc., Castelle, Inc., Delrina Corp., FISK Communications, Inc. and GammaLink — already have new products implementing the fax standards.

The T.434 standard is designed to ensure interoperability among binary file-transfer products from different vendors. When combined with fax, it offers users a new way to send data files to remote users that is similar to the way E-mail messages are sent.

The file-transfer capability works with personal computer-based fax modems and servers, as well as some fax machines. San Diego-based FISK, for example, has implemented the standard in its stand-alone, fax machine-like device that sends and receives files from diskettes to other T.434-standard devices.

According to Max Schroeder, chairman of the ICFA, binary file transfer will eventually become the communications standard of choice for transferring data of various types — including multimedia, printer files and messages — between fax machines, photocopiers, scanners, E-mail gateways and PCs. The standard will also allow integration with voice mail and private branch exchange systems.

The more recently developed fax routing standard adds a new field called the subaddress to the Group 3 fax protocol. The standard will make it easier to transmit messages to multiple recipients. For example, all LAN clients could be assigned a fax phone extension that will let inbound messages from a fax server be sent directly to the intended recipient.

Standard summaries

T.434 — An industry standard for binary file transfer that allows fax devices to send any file type, reproducing the original quality at the receiving end.

T.30 — A standard for routing faxes to users via subaddresses; allows routing information to be passed along with message content.

The fax sender, however, must know the receiver's subaddress and add it to the fax number. The pound sign is used to delineate

See **Standards**, *page 51*

Intersolv application to help users solve problems

Announces development software to help keep track of problem reports.

BY ADAM GAFFIN

Rockville, Md.

Intersolv, Inc. last week announced a new problem-tracking application for use by teams of application developers.

Its PVCS Tracker uses a proprietary database, typically sitting on a file server, to keep track of problem reports filled out by developers. These reports can then be combined into a single report for management purposes.

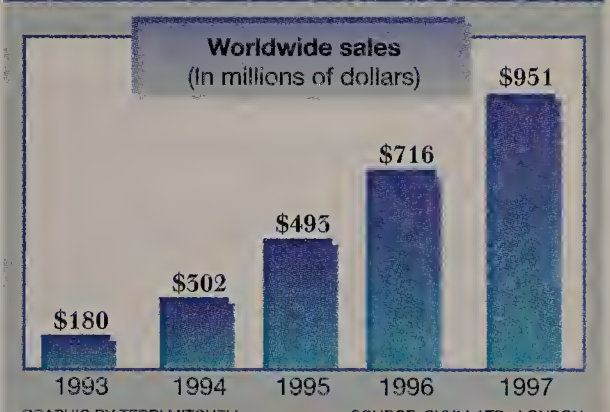
An optional server module, called PVCS Notify, adds the ability for managers or other team members to be notified immediately via electronic mail of new problem reports or changes to application code.

The software can be run as a stand-alone application or integrated with Intersolv's existing PVCS configuration management tool set, which includes such applications as version control managers and software for overseeing application development at remote sites.

When a developer makes a change in software code or notes a problem with a program module, the information is forwarded to the server database. Developers can attach files to these problem reports, such as event logs or

See **Intersolv**, *page 53*

Up with configuration management software



GRAPHIC BY TERRI MITCHELL

SOURCE: OVUM, LTD., LONDON

BRIEFS

Informix Software, Inc. last week announced three new versions of its **application development** tools. Informix-New Era View Point for Windows 2.0, priced at $595, now lets end users add, modify and delete records from the database. Informix-New Era View Point Pro 2.0 is aimed at power users and developers who want to build departmental client/server applications. It also lets developers migrate existing character-based Informix-SQL code to the graphical View Point Pro. New Era View Point Pro costs $995 for a developer's license and $195 for a run-time version.

Informix-HyperScript Tools 1.1 now supports open database connectivity and includes drivers for databases from Informix, Oracle Corp. and Sybase, Inc. A developer's version costs $1,495. All products are available now.

Informix: (415) 926-2000.

The **Electronic Messaging Association (EMA)** recently published the **EMA Glossary of Messaging Terms.** The glossary includes not only messaging definitions but a list of industry acronyms and abbreviations. It is available now for $10 for EMA members and $21 for nonmembers.

EMA: (703) 524-5550.

NetSoft, a Laguna Hills, Calif., supplier of PC-to-host connectivity software, last week announced NS/Tools for PowerBuilder, a set of **communications objects** for Powersoft Corp.'s PowerBuilder.

The software tool kit lets PowerBuilder developers create Windows-to-Application System/400 client/server applications using predefined objects, eliminating the need to write communications code. NS/Tools for PowerBuilder costs $95 and will be available next month.

NetSoft: (714) 768-4013 or (800) 352-3270.

As expected, **Novell, Inc.** announced **Tuxedo System 5** last week (*NW*, Oct. 31, page 13), which has new capabilities for distributing applications across networks. Through a feature called Domains, administrators may configure servers running the transaction processing monitor software into logical groups. This will let users control access to applications by departments or companies. Tuxedo System 5 also supports Windows NT, Macintosh, OS/2, and several new Unix client platforms. Available now, the product costs $1,975 for a five-user license.

Fox gives application outsourcing high ratings

BY BARB COLE

Los Angeles

Fox Broadcasting Co. figured it could save some money by migrating an ad scheduling application from a host-based system to a client/server environment, but much of the savings have actually come from farming out maintenance of the constantly changing application.

The fast-growing Los Angeles-based television network is saving about $150,000 a year by off-loading the upkeep of an ad scheduling system it cut over earlier this year to a firm that specializes in client/server development.

Fox, the nation's fourth largest TV network and the home to Bart Simpson, among other popular TV characters, no longer even needs to employ a full-time information systems (IS) person in its commercial administration division.

THE ALMIGHTY DOLLAR

Fox's ad scheduling application is used by about 80 salespeople and financial analysts at five locations to schedule and track television advertisements, which are typically sold up to six months in advance. However, commercial deals are always changing, and salespeople need to be able to check ad schedules on-line to make sure they do not sell advertisement space for the same time slots.

Commercial schedulers, people who actually pop the ads into time slots, also use the application to verify that competing companies' spots don't run back-to-back. In addition, the network tries to avoid running two ads in a row that have the same theme, such as skiing.

The scheduling application, written for Windows-based 486 personal computers with Powersoft Corp.'s PowerBuilder tool, runs against a SQL Server System 10 database on a Hewlett-Packard Co. 9000/730 server. The application runs across a local Asynchronous Transfer Mode network.

"This is a complex application that's changing all the time," said Corey Isaacson, president of CompuFlex International, the Woodland Hills, Calif.-based consultancy that built and now maintains Fox's system.

KEYS to the MOVE

- ☑ **Purchase computer hardware outright to avoid corporate chargeback fees.**
- ☑ **Hire consultants to develop custom client/server applications.**
- ☑ **Outsource maintenance and support of client/server applications.**

The outsourcing arrangement stipulates that CompuFlex handles the maintenance, backup and support of the hardware and software that comprises the system.

Fox took this route because changes to the application must be made frequently, as was the case after the network won the rights in March to start showing weekly football games this season. That major scheduling change essentially required a second version of the application to be written, something CompuFlex was able to do in just three months, said Mike McDougall, Fox's vice president of systems and administration.

Previously, Fox's commercial division ran an Application System/400-based scheduling application that was maintained by an internal IS team with little client/server experience. By outsourcing the application to consultants who specialize in client/server development, Fox is able to stay on its aggressive schedule when changes are required. ◼

Standards

Continued from page 50

where the subaddress begins and ends, and to signal the public telephone net to ignore the extra digits.

Some companies, such as Brooktrout, have developed software that lets the fax server recognize the phone number with the subaddress and match that with a network address. In that fashion, the incoming documents can be sent directly to a fax machine, client PC or E-mail address.

Boris Elpiner, general manager of the fax server product line at Castelle, said his company's FaxPress fax server software will automatically determine the best method to route the file, whether via E-mail or telephone lines.

"It is essentially E-mail; there is no difference," Elpiner said.

Both binary file transfer and fax routing promise users the ability to store documents digitally and, with the click of a mouse, to fax them without using conversion techniques. ◼

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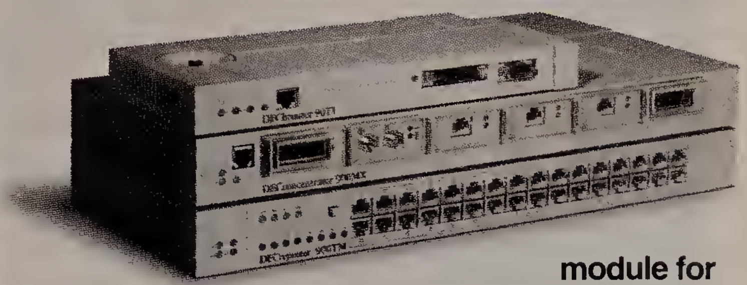

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Circle Reader Service #47

DOCUMENT CONVERSION

Interleaf spins out new Web integration software package

BY ADAM GAFFIN

Waltham, Mass.

As businesses race onto the Internet, they are increasingly hitting a large speed bump: the difficulty of converting existing information into the format used by the World-Wide Web (WWW).

Interleaf, Inc. last week announced that it has a solution to this problem in a new software package that can convert between several word processing, graphics and document management formats and the Hypertext Markup Language (HTML) used by WWW documents.

HTML is a page-markup language in which embedded codes are used to specify type styles, graphics and links to other resources. Although several editors are now available to create HTML code, existing documents have to be manually rebuilt to make them WWW-ready.

NAVIGATING ON THE WEB

The WWW is a growing set of databases and documents accessible via the Internet and connected through hyperlinks that allow for point-and-click navigation.

Cyberleaf, initially available next month for OSF/1, HP-UX, AIX and SunOS versions of Unix, is a client application that can create HTML documents out of individual documents in Interleaf, Adobe Systems, Inc. PageMaker, Microsoft Word, Novell, Inc. WordPerfect and ASCII formats. Any embedded images are converted into Graphics Interchange Format, the predominant WWW imaging format; any existing hyperlinks, such as those found in Windows Help or Interleaf documents, are converted into HTML links.

Interleaf, best known for its document management software, said Windows and Windows NT versions are planned for the first quarter of next year.

Cyberleaf is one of the first tools of its kind and represents the beginnings of a new market for integrating existing corporate data with Internet information.

Cyberleaf does not allow for the creation of HTML forms, such as those that might be used in an on-line ordering system. However, users can create links to forms created with other editors.

Cyberleaf is one of the first tools of its kind and represents the beginnings of a new market for integrating existing corporate data with Internet-based data, said Linda Myers-Tierney, a consultant with the Electronic Workplace Group at market research firm International Data Corp. in Framingham, Mass.

Future applications in this market will be more tightly integrated with emerging WWW security and transaction processing applications, but Interleaf declined to detail what extensions it will make to Cyberleaf.

Pricing starts at $795 for the Unix versions; Windows versions will start at $495.

✆Interleaf: (800) 955-5323.

Intersolv

Continued from page 50

screen shots of errors.

The information it compiles can then be converted into a report for trend analysis, said Tobi Moriarty, director of PVCS product marketing.

PVCS Tracker currently supports Windows, Windows NT and OS/2 platforms, but the company aims to add support for a variety of Unix platforms sometime in 1995, Moriarty said.

PVCS Notify supports both Microsoft Corp.'s Messaging Application Programming Interface and the Vendor Independent Messaging (VIM) API backed by Lotus Development Corp.

At Shared Medical Systems Corp. in Malvern, Pa., the software has helped spot emerging problem areas in applications under development and given managers better data for tracking applications from development to implementation, said John Paul, manager of development services for the company's strategic LAN development group.

About 150 of the company's roughly 1,000 developers now use the software to file problem reports, he added.

PVCS Tracker pricing starts at $495 per user license. PVCS Notify pricing starts at $995 per server license.

✆Intersolv: (301) 230-3200.

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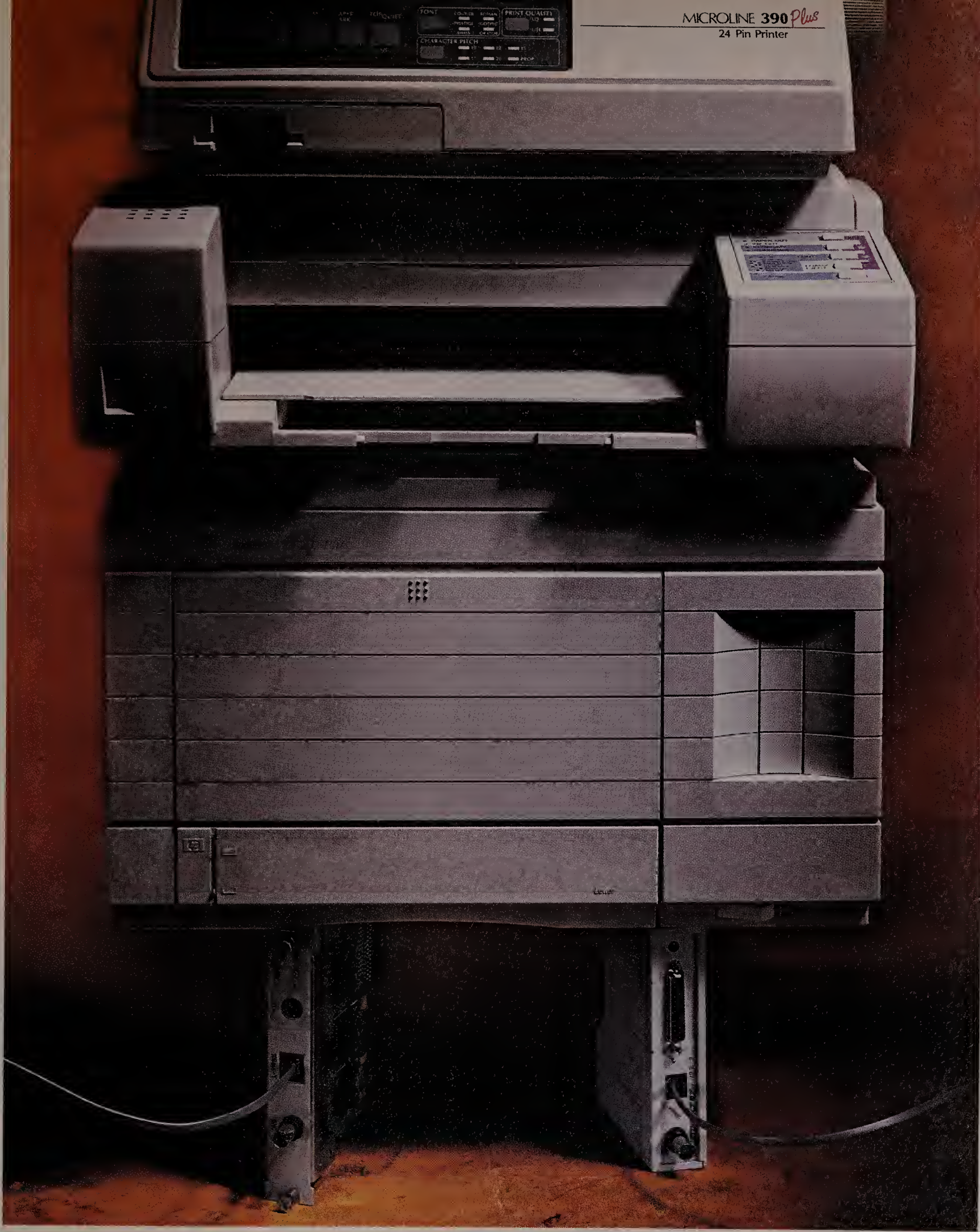

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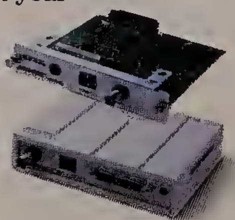

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Dazel preps Windows version of document distribution software

BY ADAM GAFFIN

Austin, Texas

Dazel Corp. last week said it will soon roll out a Windows client for its client/server-based document delivery and output software.

The software, called Dazel, is aimed at giving MIS directors and users a centralized way to use and manage fax and printer servers across an enterprise. Dazel can also be used for routing electronic mail and other files.

It relies on the Open Software Foundation, Inc.'s Distributed Computing Environment (DCE) to provide directory and device support across an enterprise, making it one of the first off-the-shelf applications to support DCE. An open application program interface (API) lets Dazel be integrated with other applications.

The new Windows client, due to ship in early December and dubbed Dazel Express, will not initially support DCE but will be able to log on to Dazel's DCE servers via proxy software, according to Robert Fabbio, Dazel president.

Direct DCE support is in the works for the Windows client, he added.

The Windows client handles presentation and lets end users create their own directories and distribution lists.

It works with Dazel's server component, which comes in several Unix flavors and handles the actual distribution of information. A new version of the server software includes support for multiple DCE directories and an accounting function for tracking messages.

A Dazel-ing performance

Dazel can transfer files to recipients via:

◆ E-mail
◆ Fax
◆ Pager
◆ Printer

Currently, the company sells Unix client and server software supporting SunOS, Solaris, AIX and HP-UX. The product comes with its own relational database for managing directories and routing but can be quickly snapped atop databases from Oracle Corp. and Sybase, Inc., Fabbio said.

THE OPTIONS

With the software, users can employ either an enterprise directory or create their own. They can specify whether outbound data should be sent to recipients via E-mail, fax or pager, or whether it should be sent to a nearby printer. Users can also group recipients into mailing lists.

The software currently supports the Internet-based Simple Mail Transfer Protocol, but Fabbio said the company is looking to add support for Microsoft Corp.'s Messaging Application Programming Interface and the Vendor Independent Messaging (VIM) API backed by Lotus Development Corp.

John Rymer, an analyst with the Patricia Seybold Group, Inc., a Boston consulting firm, praised Dazel's approach. Users do not have to worry about DCE's complexities since the technology comes integrated with Dazel, he added.

The software "is really well designed and very extensible," he said.

Pricing starts at $99 per license for both Windows and Unix clients. Server pricing depends on the number of users and can range between $25,000 and $250,000.

©Dazel: (512) 418-8338.

Vendors

Continued from page 50

that kind of thing," said Tim Lyons, director of information systems at Nationwide Life Insurance Co. in Columbus, Ohio. Lyons said his preference is to stick with his existing relational database vendor, Oracle Corp., since much of the company's data is already stored on Oracle databases.

Gartner Group's Strange warned that using specialized databases that employ proprietary programming languages can result in islands of data. For OLAP applications, he recommended going with products that bolt onto relational systems and provide a multidimensional view of relational data.

Minnetonka, Minn.-based Information Advantage, Inc.'s AXSYS Applications System is such a product, Strange said. It provides multidimensional access to data stored in databases from Sybase, Oracle and Informix Software, Inc. Another company, San Francisco-based Stanford Technology Group, Inc., sells Prophet, a data warehousing server-based engine that works with several relational databases.

"Over the next five years, OLAP will evolve from a closed, monolithic approach to a more open, modular architecture," Strange said.

Comments?

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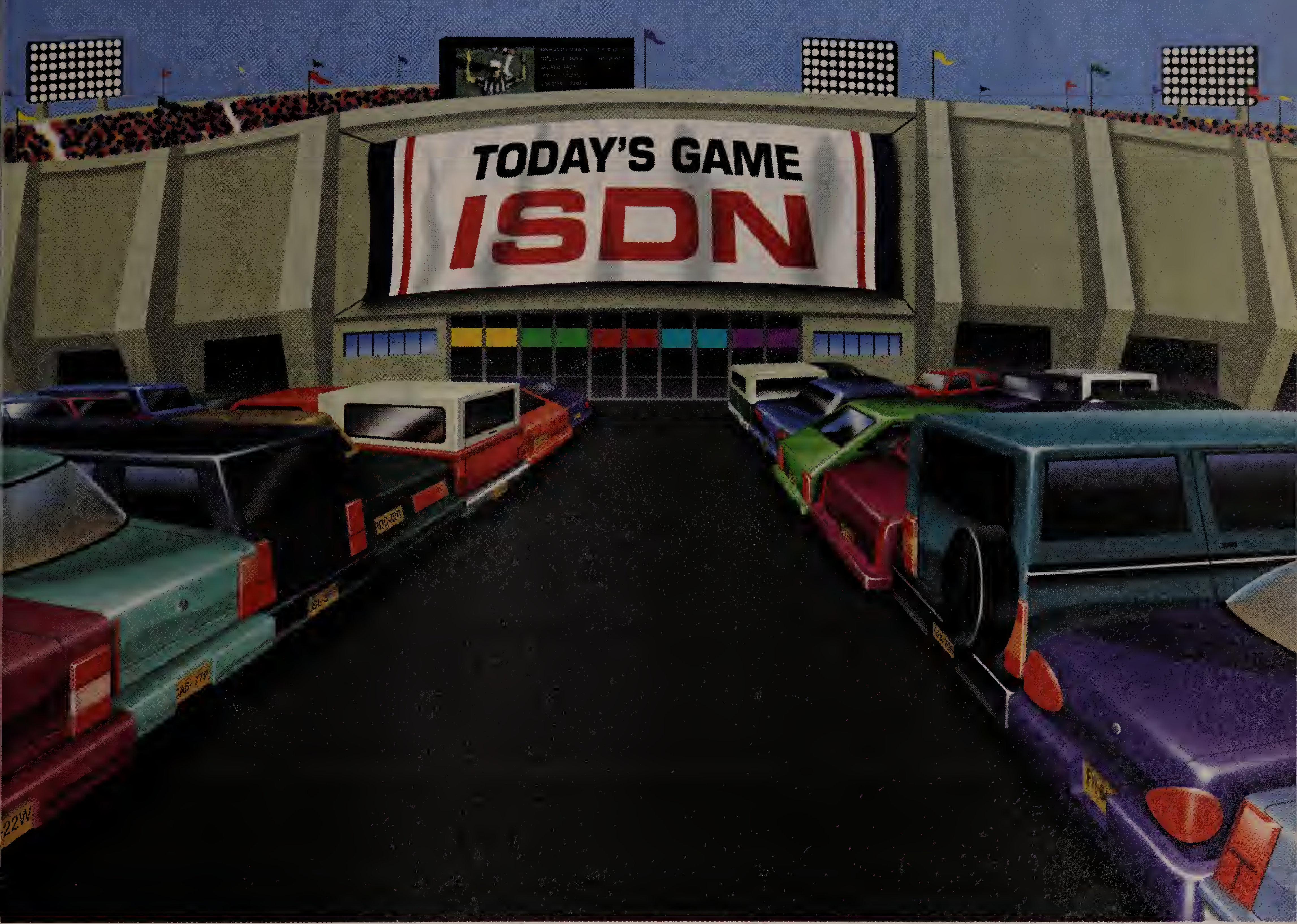
Circle Reader Service #73

Motorola Has Everybody's Ticket to ISDN



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ISDN is becoming the most popular game in town, and Motorola has everybody's ticket! It's the TA210, a low-cost, high-speed terminal adapter that is the ideal entry-level device for your migration to the world of digital data and voice communication.

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The TA210 supports asynchronous transfer rates from 30 bps to 115.2 kbps and synchronous transfers from 1200 bps to 64 kbps. The voice port supports as many as three telephone extensions.

Since the TA210 is compatible with a wide variety of central office switches and supports the ISDN Solutions '94, your migration will be quick, painless, and very economical.

The TA210 is part of a total data communications solution from Motorola's Transmission Products Division that ranges from laptop, to LAN, to digital. For details, call your distributor or contact us, today!

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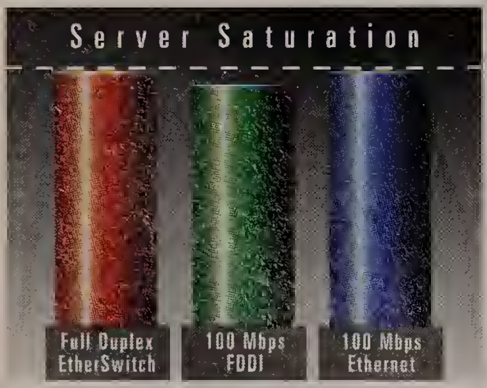
MOTOROLA

Circle Reader Service #41

WHY IS EVERYBODY TALKING ABOUT 100MBPS BUT BUYING KALPANA ETHERSWITCHES?

YOUR SKINNY LITTLE ETHERNETS CAN ACTUALLY OUTMUSCLE THE FAT PIPES.

Fact is, network performance is limited by what your servers can process. So you can squeeze as much or more out of them–about 20Mbps, tops–with EtherSwitches as you can with costly FDDI or 100Mbps Ethernet.



Running real applications, popular NetWare 486 servers top out at about 20Mbps, with EtherSwitch ahead of FDDI and neck-and-neck with 100Mbps Ethernet.

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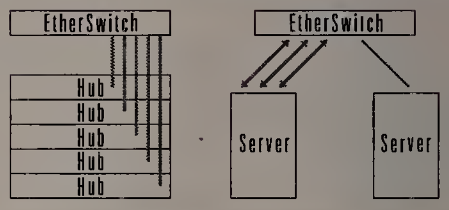

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For an immediate FAX-back response, call **(408) 749-1900, extension FAX**, and select the information you want from the document index. For a copy of Infonetics Research's "Server Bandwidth Congestion–Practical Limits; 10 Mbps versus 100Mbps Solutions," select document number 353.

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Data Comm Magazine Top Performer March 1994

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Circle Reader Service #**62**

SHARED LOGIC

by Mike Rothman

Ding, dong! OpenMail's dead

Slowly but surely, I'm getting an ulcer.

Why? Because early last year, I predicted Hewlett-Packard Co.'s HP OpenMail had a chance to become a strategic client/server messaging platform.

But I have been proven wrong by last week's HP-Lotus Development Corp. announcement where HP bought lock, stock and barrel into the Lotus Communications Strategy — the strategy, not the server — as its long-term integrated groupware and messaging platform.

This clearly positions OpenMail as a tactical messaging-only solution.

So now I will eat crow. Yum, just like mom used to make.

I admit to having seen the writing on the wall, but as my boss periodically says, "You just haven't been around long enough to believe in natural laws."

He's right. I even ignored Rothman's Natural Law No. 15: HP is a great hardware organization; software is another story.

This law says if HP can possibly blow a lead in the software world, then it will. Now kids, can you say "NewWave?"

This time I thought it was different.

There was a real need for a scalable client/server messaging solution. My clients were in severe pain trying to scale and manage large — 25,000 to 30,000 users — cc:Mail and Microsoft Mail networks. Lotus and Microsoft Corp. were — and still are — blowing smoke.

At the time I was recommending HP OpenMail, it was the only game in town. So I did the right thing and recommended that users consider HP's offering.

Yet in the back of my mind was Natural Law No. 15. I knew there were sales force issues and that — much to my chagrin — the renowned HP software marketing machine was on the job.

Then HP missed out on buying SoftSwitch, Inc. to Lotus, and things seem to have degenerated.

But I still had hope because it seemed so easy to me. All HP had to do was not screw up and it would gain a commanding lead in the client/server messaging market. After all, HP had an 18-month lead.

But now that's gone and the crows are on the barbecue.

The HP-Lotus alliance is not necessarily a bad thing, but it presents a delicate situation for HP. What to do with the approximately one million OpenMail users out there?

The company's answer is a Roberto Duran-like "no mas." HP is essentially de-emphasizing its own products in favor of those from Lotus.

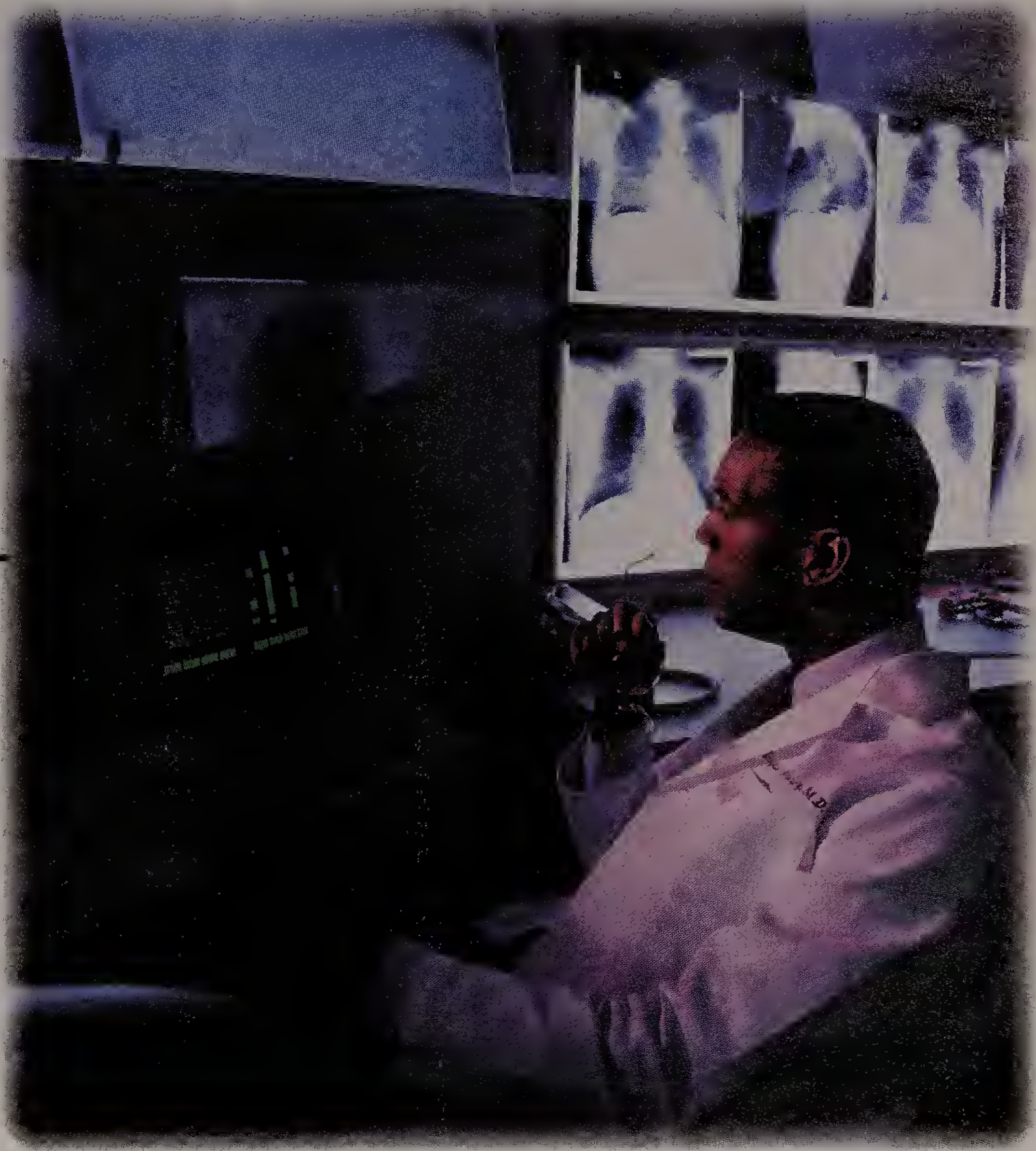
What does this mean to users? Well, if you have implemented OpenMail, you have two paths based on your groupware plans. If you only need messaging, OpenMail will suffice until you can depreciate it and rip it out. If you need groupware today, try to make OpenMail look like your boss's decision, and let's all pray that HP puts a solid migration path in place in 1995.

If you are considering OpenMail, I have one word of advice: Stop.

In my humble opinion, the product has no future. You are better off limping along with your existing cc:Mail or Microsoft Mail infrastructure and hoping the behemoths deliver their next-generation products as they advertised.

Bottom Line: In a huge coup for Lotus, HP drinks its own bathwater and pulls the plug on OpenMail. Lotus smells like roses, building huge mind-share for its communications strategy, opening up a new distribution channel in HP and getting a strategic server platform. OpenMail users, pick yourselves up, dust off and enjoy the crow. It's a delicacy, don't you know?

➡ Rothman is director of GNS Consulting for META Group, Inc., a consultancy in Reston, Va. Feedback is welcome either by E-mail at MikeR@metagroup.com or by phone at (800) 622-1108, Ext. 521. Rothman's column alternates in this space with that of Marc Myers, president of Client/Server Connection, Ltd.



He Just Performed A Double By-Pass.

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He couldn't have proceeded without information from a computer in the next building. He never noticed that the communications link had been disrupted between the remote computer and his own.

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If you would like us to fax you more information about LAN Server 4.0 directly, call 800 IBM-4FAX and request documents 1834 & 1835. Product information and demonstrations are available on the Internet at www.austin.ibm.com/pspinfo. IBM, OS/2, AIX, AS/400 and NetView are registered
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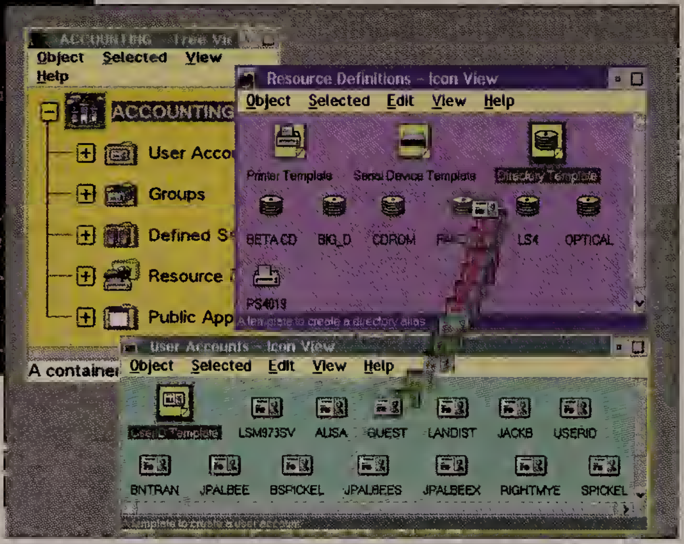

A template to create a directory alias

A template to create a user account

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EDITORIAL INSIGHTS

Click on Opportunity

All the hubbub about Microsoft's on-line services network, which CEO Bill Gates was to demonstrate today at Comdex, has centered on the devastating impact it could have on commerical network providers like CompuServe, Prodigy and America Online.

But there has been little recognition of the tremendous opportunity the Microsoft Network, as it was expected to be called, may present your business.

The Microsoft Network is envisioned as an meeting place for tens of millions of future Windows users. As such, it may provide an invaluable new medium for marketing your products and services and improving customer support.

Features for accessing the Network will be built into future versions of Windows, which have tremendous sales potential, given the vast base of current customers. Microsoft is expected to price basic access at about $5 a month and give partners a good deal of control over how they price and market value-added services built on the Microsoft Network.

Given Microsoft's pending acquisition of Intuit — the Quicken financial software provider — and its expanding relationships with banks and credit card companies such as Visa International, the Network is also likely to provide a rich array of financial service and transaction features.

In short, the Microsoft Network may prove an ideal platform for new business-to-business and consumer applications.

Granted, the Microsoft plan is all futures at this point. But on paper, the current commercial network providers don't stack up well. The largest of them, CompuServe, has only about 2.5 million subscribers — significantly more than its nearest competitor. While these providers have been reducing prices, they charge more for basic services and keep tight control over value-added pricing and branding.

I know what you're going to ask: What about the Internet? Amen. It has a huge user base, and many companies are already exploring its potential for commercial ventures. It's getting easier to use, and new companies are providing tools for securing transactions over the 'Net — all positive developments.

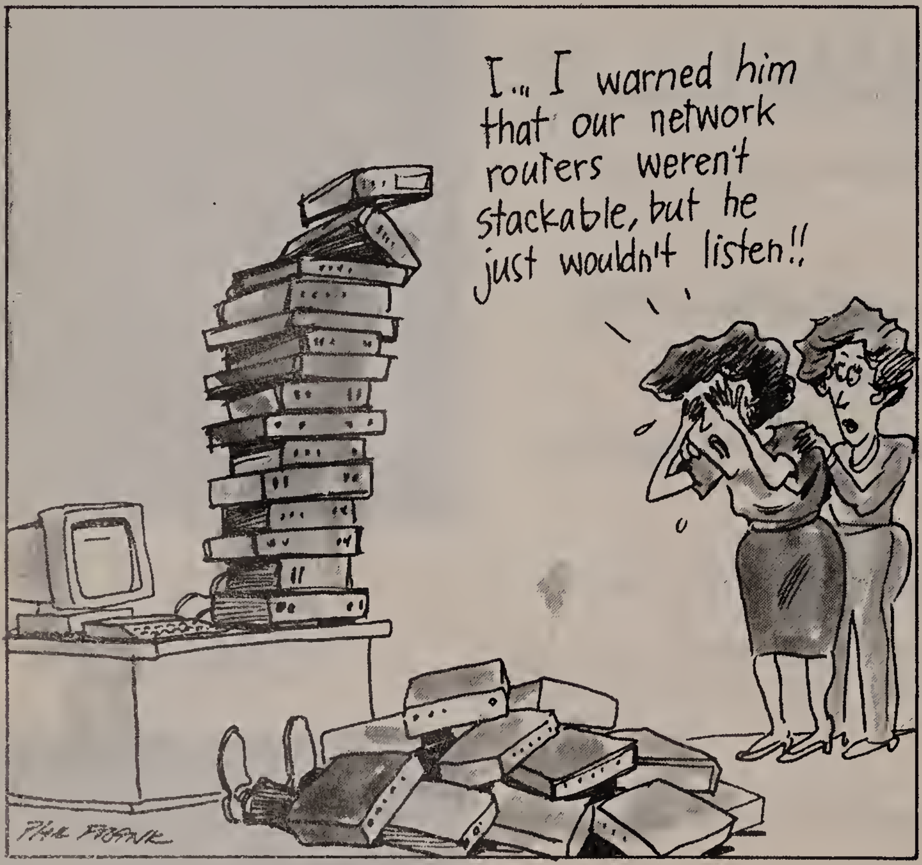
But because Microsoft controls the entire Microsoft Network platform — compare that to the oft-cited anarchy of the Internet — as well as the desktop access platform, it may have an edge in helping partners get services on-line.

Now's a good time to find out how the Microsoft Network could help your company open a sales channel into all those Windows desktops out there. To find out more, call Microsoft at (206) 882-8080 and ask to talk with one of its executives about on-line services.

JOHN GALLANT jgallant@world.std.com

TELETOONS

FRANK AND TROISE


I... I warned him that our network routers weren't stackable, but he just wouldn't listen!!

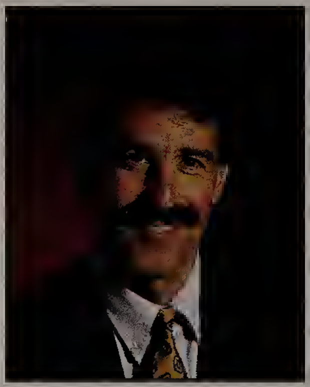
ADVANTIS CONFERENCE

by Jeffrey Kaplan

IBM reasserts its position as force in network industry

Recently, IBM celebrated the second anniversary of its Advantis network services subsidiary with the organization's first annual Users Conference. IBM used the occasion to send the industry a powerful message regarding Big Blue's intention to reassert itself in the networking market in a manner that many industry observers may have overlooked. IBM plans to rely on a combination of transport and support services rather than benchmark products alone to win back customers longing for the comforts of a single-source supplier.

Advantis is the joint venture formed by IBM and Sears, Roebuck and Co. in 1992, which brought together IBM's Information Network staff and Sears' Technology Services Division. The initial goal of the joint venture was primarily to provide network transport services to customers that were seeking help solving their complex networking needs. Advantis offered basic network design, integration and management services to supplement customers' internal skills. It has operated as a subsidiary of IBM's Integrated Systems Solutions Corp., the company's outsourcing unit.



When Advantis was first formed, it intentionally steered clear of associating itself with its IBM parent. At the conference, however, the IBM connection was prominently displayed and accentuated. To reinforce this point, James Cannavino, IBM's senior vice president of corporate strategy and development, served as a keynote speaker at the meeting. In his speech, he emphasized the key role that networking technology and services will play in IBM's future as one of the company's six strategic initiatives, and the model that Advantis represents in solving customers' networking needs.

The emphasis on support services was also new. In the past, Advantis has stressed its network transport services rather than its network support capabilities. At the Users Conference, considerable attention was given to Advantis' network support skills in general and network outsourcing capabilities in particular. Syd Heaton, Advantis' chairman and chief executive officer, predicted that by the end of 1995, network support services will generate more than 50% of Advantis' revenues.

The IBM and Advantis leaders did not stop with general discussions about the support capabilities of the organization, however. They aggressively positioned themselves in the network outsourcing business, as well.

Based on conference attendees' reaction, outsourcing is no longer a dirty word. Dataquest's research shows a growing acceptance of network outsourcing among customers. However, vendors have historically refrained from using this term with customers, many of whom equate outsourcing with outplacement. But Advantis used the term freely throughout the two-and-a-half-day gathering, and attendees did not seem threatened by this topic. Instead, they viewed outsourcing as a necessary business option that could extend from enhanced voice and/or data transport subscription services to pure asset transfer-style outsourcing arrangements.

Among the most popular breakout sessions at the conference were a dozen presentations about electronic messaging and commerce services. Many of these presentations focused on electronic services already in place and included testimonials from current customers, large and small. Other presentations talked about near-term futures, such as Internet-based services, which drew the conference's largest crowds. Each offering was positioned as a "subscription outsourcing" service, which can reduce the up-front investment customers have to make in their own nets and can increase the functionality.

The conference also served as a launching point for IBM's campaign to address customers' multinational networking needs. This escalated effort will be spearheaded by IBM's new Global Network organization. John Whiteside, whom IBM recently recruited from MCI Communications Corp., will serve as its general manager. IBM intends to capitalize on the momentum created by Advantis' success by aggressively promoting IBM's Global Network in a series of advertisements in major business publications. Big Blue's objective is to convince customers that IBM can supply network transport and support services worldwide. IBM believes that it can successfully compete on a global basis with the established multinational carriers by supplying cost-competitive transport services with enhanced network management and application features.

The most significant message from this conference is that IBM is on the rebound. The Advantis staff had done its homework and found that customers are no longer turned off by the prospect of working with IBM. In fact, many of the customers in attendance at the conference were longtime IBM users who turned to Advantis because of its close ties to IBM. They are happy to see the company asserting itself in the net market and aggressively helping them solve their networking needs. But, most importantly, these customers are pleased with Advantis' performance. There weren't the usual complaints heard in barrooms and hallways. These customers are looking forward to more networking services from IBM in the future.

Many industry observers have focused their attention on IBM's network technology developments, handicapping the company's future success based on its ability to produce the next generation of leading-edge products. What these pundits forget is that IBM never produced the best computers during its glory years. Instead, the company gave its customers the greatest sense of confidence that it would help them solve their data processing needs. Dataquest research shows that customers would prefer to turn to a single source to meet their networking requirements. Many customers appear to be turning to IBM's Advantis to play this role.

It may be too strong to characterize the first annual Advantis Users Conference as a love fest. But, given the enthusiastic response from the customers in attendance at last month's event, the rest of the industry should take notice that IBM is a force to be reckoned with in the global network outsourcing market.

Kaplan is director of the Dataquest Worldwide Services Group in Framingham, Mass. He can be reached at (508) 370-6174.

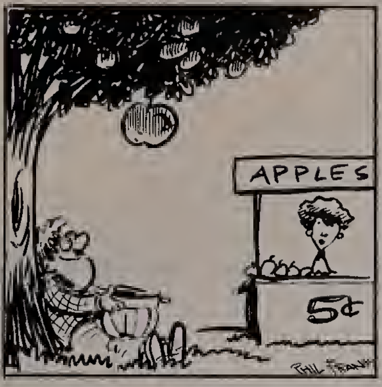
ASYNCHRONOUS TRANSFER MODE

by Jim Lane

Provide basic services today and leave glitzy applications for the future

A recent front-page article about voice and data integration over Asynchronous Transfer Mode (Oct. 3, page 1) indicates that prospective users are becoming aware that ATM is far from being what all the hype says it is. Now that reality is setting in, maybe we can start to focus on solving today's network problems instead of being preoccupied with the gee-whiz applications of the future.

The heart of the article dealt with ATM's inability to support voice on demand in its present state of evolution. Currently, the only way to handle voice service is to use circuit emulation to permanently establish DS1s. These links occupy bandwidth even if no voice is being carried, which robs the ATM channel of additional data capacity during idle voice periods. As the article pointed out, this inability to dynamically allocate bandwidth between voice and data is causing potential early ATM adopters to have second thoughts.



This acknowledgment that current ATM services have limitations is refreshing, but shouldn't be discouraging. For the past couple of years, vendors, carriers and a few outspoken users have been busily promoting ATM as the ultimate answer to the problem of mixing voice, data, video and anything else that comes along, into one integrated service. But, while people have been trying to integrate voice and data for about 30 years, nobody has really done a good job of it yet. There's a good reason for that: It's hard.

Voice and data are as different as oil and water, and they mix about as well. It would be surprising if, after just a couple of years, ATM achieved the elusive goal of integrating voice and data. But the boosters would have us believe that ATM is the cure for every network problem, and the service of our dreams is just around the corner.

Now, I think ATM is a terrific idea, and in the long run, it probably is the answer to most problems plaguing network managers. But it's time to cut the hype and stop implying that network nirvana arrives with the installation of a couple of cell switches. We're several years away from multicarrier, bandwidth-on-demand, multimedia services and the like. There are too many tough standards to tackle, too many interoperability issues to work out and too many technical details to resolve for that day to come anytime soon. The ATM Forum, after building on 10 years of work by the CCITT and Bell Communications Research, is just getting down to the hard stuff.

In the meantime, by setting early expectations too high, we may find that the people we're counting on to get things rolling — aggressive early adopters with real-world networking problems — will become disillusioned with ATM.

As these would-be pioneers wait while standards issues lead only to more standards issues rather than to stable services, their patience will eventually run out. Then, they'll find other solutions, leaving ATM to march right behind ISDN into the history book of unfulfilled technical promises.

This would be something of a tragedy. Even now, in its early form, ATM offers some pretty good solutions to a lot of problems and can only get better with time. What's needed is for everyone to stop worrying about the technology and the nifty things ATM might do someday and figure out how to get the ball rolling with early services that solve today's real problems with the present state of the art.

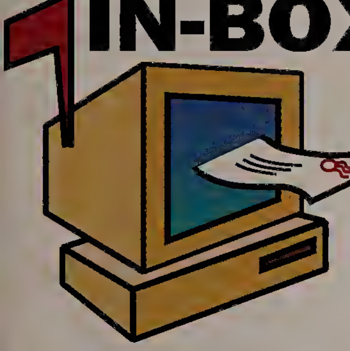
A good place to start is by shedding the idea of leased bandwidth. Carriers have locked users into the notion that the cheapest way to get service is to lease wholesale bandwidth rather than buy services. Any user leasing an expensive pipe like a T-3 wants to make sure it's as full as possible all the time. On the other hand, a user buying a collection of services at a reasonable price is not going to worry about full pipes, efficiencies or service integration — it's not the user's problem.

Today, most users aren't running integrated voice/data applications. They need conventional phone services and data communications. The only reason for these users to worry about the inefficiencies of circuit emulation for voice service is if they lease the pipe. If most users today could buy services and get the same or a better price than by leasing a whole pipe, they probably wouldn't care if data goes over ATM and voice over the existing network.

Most real-world users don't need the highly touted benefits of ATM today. But they will need something better than frame relay down the road. What's important is to get the ATM network up and running, and use it to meet real data communications needs and provide real services — learning, building and improving as we do so. Perhaps if carriers can get users' minds (and their own) off the pipes and onto service, we can get started now and have a network ready for the glitzy integrated applications when they surface.

Lane is president of TRAC Associates, Inc., a telecommunications consulting firm in Sagamore, Mass. He can be reached at LaneTRAC@aol.com.

IN-BOX



Size counts

I just finished reading your review of Legato Systems, Inc.'s NetWorker (Oct. 10, page 45). I wanted to point out that the product works fine until a site has to hold a tremendous volume of data.

We have a large system with more than 150G bytes of data and have a very large index (more than 400M bytes). We have had problems with a corrupted index and missing items. I just thought someone should point out that the product does have limitations in a large system environment, in my view.

To date, NetWorker is the most robust package I have seen on the market. I think as other Unix data centers grow, they will experience the difficulties that we have run into. Hopefully, Legato will reengineer the product to work better in large environments.

Michael Wojtowicz
Manager of systems and engineering
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In defense of fast Ethernet

I read with interest and some surprise your article about fast Ethernet and Asynchronous Transfer Mode (Oct. 10, page 1). A number of statements were made in your article that are completely unfounded. I would like to relate a few of them.

Your article states that "many of the pieces necessary to launch fast Ethernet are still missing and will not be available for another 12 to 24 months." It would be helpful if you could specify exactly what those missing pieces are. Grand Junction Networks, Inc., for example, is shipping network interface cards, switches and repeaters. Granted, their products are for CAT 5 cable, but this is fine for many users, especially for new installations.

Your article also states that "3Com Corp., one of the original backers of fast Ethernet, concedes some points to Cabletron," but the only quote you provided from 3Com is in total disagreement with the Cabletron position. It would be helpful if you pointed out exactly which points 3Com concedes to Cabletron.

Your article did not mention cost, which is still a very important consideration for people purchasing networking equipment. Fast Ethernet adapter cards are being introduced for less than $3,000. This is already half of what most FDDI cards cost, although they have been on the market for many years. If you take a look at what needs to go on a Fast Ethernet card and how many vendors are working aggressively to reduce the cost of these parts, it becomes evident very quickly that prices of fast Ethernet solutions can and will go much lower.

As your article states, switched Ethernet is an excellent solution. The nice thing about fast Ethernet is that it fits so well into the switched Ethernet model — initially by providing wider ports to servers or as a wider bandwidth connection between switches and, at a later stage, by providing switches that offer the flexibility of dual speed on all ports. The incremental cost for fast Ethernet solutions over conventional Ethernet will be small enough in a very short time that people will be

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Buyer's Guide

Support for more WAN options, ports and protocols makes products for the range more livable, but better offerings are ready to mosey on in.

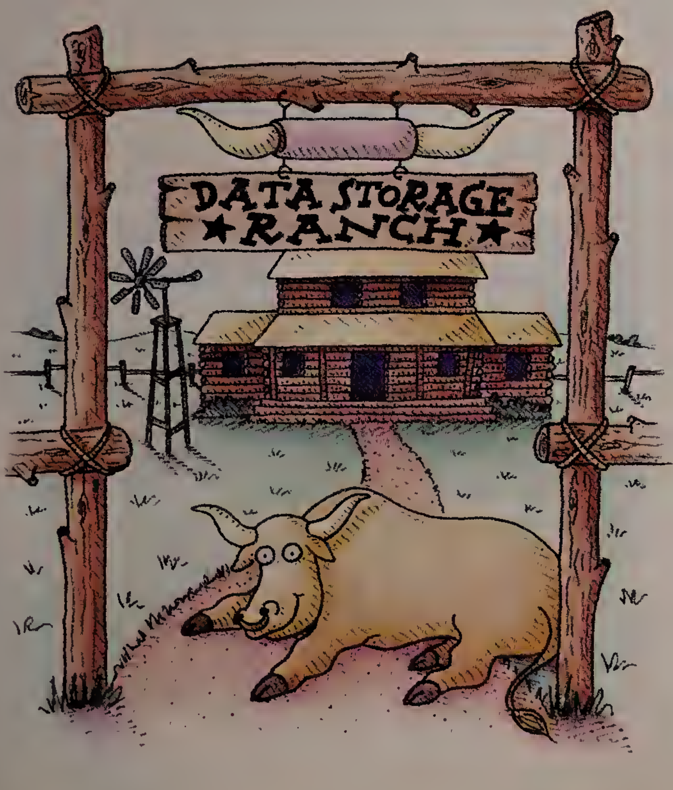
Ready to rope a remote access deal?

By MARK MILLER

All those high-tech cowpokes roaming the range with laptops in their saddlebags or taking up residence at frontier outposts have higher capacity and more functional remote LAN access products to keep them in touch with the folks back at the data ranch.

Net managers scouring the market are finding a wider array of new or enhanced dial-up bridge/routers, remote access servers and remote node software that enables far-flung users to link into a centralized LAN and work as if they were locally attached. Once connected to the LAN, typically over a dial-up circuit, these remote nodes become full-fledged clients and are free to access any central LAN service or resource, including routers that provide access to other sites across the enterprise.

This is a step above such traditional methods of remote access as terminal emulation or remote control software, which provides limited access to LAN-based hosts.



"Architecturally, we have seen a great maturing of remote access products in the last year," says Brad Baldwin, principal at Baldwin Network Research in Fremont, Calif.

Today's products are providing remote clients with smoother access to centralized LAN resources. For instance, a growing number of vendors offer LAN spoofing, which keeps logical sessions between a remote client and a centralized LAN active even when there is no data moving across the wide-area link. Once data must move between the remote client and LAN, the remote access device will reestablish a temporary WAN link.

Other improvements include support for a greater number of network transport protocols and remote client operating systems. Inverse multiplexing, which spreads a high-speed datastream across multiple switched data links, as well as data compression are making it possible to squeeze more data across WAN links, especially analog dial-up lines.

Remote access products are also working over a broader range of WAN links, everything from analog dial-up lines to switched digital circuits. Some products are now offering leased-line and frame relay access options that provide users a migration path to dedicated links once traffic can justify it.

But the real key in increased WAN options is growing support for ISDN, especially in large metropolitan areas where the service is becoming more widely available.

"For perhaps the first time, ISDN has discovered a perfect application: remote LAN access at high speed over digital lines with high reliability and quick connect time," Baldwin says.

As user interest in remote LAN access takes off, even more vendors are pushing their way into the market. "The router, modem, hub, remote control and terminal server companies have been expanding their technologies to compete in this same market," says Michael Howard, president of Infonetics Research, Inc. in San Jose, Calif.

Continuing technical developments promise to keep new offerings coming at a rapid pace, forcing users to keep an eye peeled out for the day when remote access services are built directly into network and remote client operating systems. For instance, Microsoft Corp. is stuffing remote access services directly into its forthcoming Windows 95 operating system, which was code-named Chicago.

Remote LAN access is getting so much attention today because corporate leaders are realizing that extending full LAN client capabilities to remote users has a tremendous value.

"While network buyers agonize over the virtues of Asynchronous Transfer Mode and other upcoming high-speed LAN technologies, they are spending money to connect their remote offices, telecommuters and mobile workers," Howard says.

The key users of the technology are remote office staff that don't generate enough traffic to justify a dedicated link, telecommuters and other work-at-home users, as well as nomadic professionals such as salespeople and service technicians. Howard projects a tenfold increase in spending on remote access products, shooting up from the $238 million shelled out in 1993 to a whopping $2.23 billion by 1997.

In addition to shifts in corporate culture that favor the decentralization of large organizations across multiple branch offices, Baldwin says changes in American society are also fueling the remote LAN access market.

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"Clean-air legislation at both the federal and state levels has incented corporate management to find alternatives to commuting," Baldwin says. "In addition, the parental leave legislation, which provides for job security when employees are faced with conflicts between family matters and corporate responsibilities, adds more incentive for employers to provide alternatives to working strictly at the office, and remote LAN access is a leading one."

LAY OF THE LAND

The wide array of choices available today, along with impending products, can shroud the selection process in a cloud of dust, especially if net managers do not fully understand the differences between each class of remote access product.

Each product class brings its own nuance to the relatively straightforward concept of making remote nodes full-fledged clients on a central LAN. From a broad view, a node running remote client software is linked to a central-site dial-up bridge/router or remote access server that assigns it a local node address, thus making it appear as if it were physically attached to the LAN.

Ask and ye shall receive

Of the 64% of employees who require remote LAN access, only 6% have it. But this figure is expected to jump 24% in the near future.

SOURCE: DATAQUEST WORLDWIDE SERVICES GROUP, FRAMINGHAM, MASS.

Remote access protocols are used to pass traffic between the client and LAN over the wide area. Those protocols can be proprietary or based on industry standards such as Apple Computer, Inc.'s AppleTalk Remote Access Protocol, the Internet Engineering Task Force's Point-to-Point Protocol or even the older Serial Line Internet Protocol.

Since traffic can be passed over WAN links at the data link layer or network layer of the seven-layer Open Systems Interconnection model, dial-up bridge/routers and remote access servers can add bridging and routing capabilities to their products.

The distinction between dial-up bridge/routers and remote access servers is a fine one. Dial-up bridge/routers are often downsized versions of their larger brethren that support leased lines, and they work in pairs to establish temporary LAN-to-LAN links.

These LAN-to-LAN links permit remote LAN clients to access a central LAN and log on as if they were directly attached, as opposed to going across traditional dedicated bridge or router links that would treat them as members of a subnet.

For instance, a remote bridge/router detects a node's request for central LAN services and dials up a link to a similar bridge/router that connects the remote node to the central LAN as a full client. The bridge/routers exchange packets and disconnect the link when the transaction is complete.

Remote access servers typically support temporary remote client-to-LAN links on a per-node basis. For example, single nodes in different locations can dial up a connection to a remote access server, log on as if they were directly attached to the central LAN and disconnect the link when the work is done.

A growing number of products in both classes are offering spoofing on either end of a link in order to keep LAN sessions logically alive when the lack of wide-area traffic causes the link to time out. The wide-area link is reestablished when traffic must be passed between the remote node and the central LAN, obviating the need to repeat logon sequences.

Both classes of products are taking on the attributes of the other.

This is a far cry from the days when dialing in to a host or terminal server and emulating a dumb asynchronous tube to gain access to LAN resources was the only option. It's also a step above simple remote control packages that enable road-bound workers to dial up a connection to a central LAN node and control the operation of applications running on that node. In fact, selecting a remote control software package is often a totally separate purchasing decision today (see story, this page).

Indeed, today's higher level remote access products enable applications to continue running on the remote node. Only requests for services or data and responses to those requests are passed across the wide-area link.

WHAT'S IN THE BOX

The majority of today's remote access products are fixed-port or expandable hardware units. At a minimum, these boxes include serial ports that provide connection to external modems, but some come with integral modems.

Likewise, units supporting links to digital WAN services or to ISDN come with ports providing connection to external network access devices such as a data service unit/channel service unit or ISDN terminal adapter, or they came with integral network access interfaces.

Incoming data is shuttled across a bus to a LAN port, which is most often an integral LAN adapter that makes the remote client appear as if it were physically attached to the LAN.

There are also software-based products that enable DOS-, Unix-, OS/2- or Windows-based workstations to act as a remote LAN access server. Some software-based products such as Novell, Inc.'s NetWare Connect run as NetWare Loadable Modules on NetWare servers, while a few such as Apple's Apple Remote Access and Telebit Corp.'s NetBlazer run on Macintoshes.

These software-based products can tap the WAN and LAN interfaces already installed in the servers or utilize serial ports to pass traffic to network interfaces installed in external devices.

More products are hitting the market all the time. U.S. Robotics, Inc. announced in September that it will ship its Total Control NetServer Card later this month. The Total Control NetServer card will reside in the firm's Total Control Enterprise Network Hub, a rack-mounted product that supports multiple modem boards and other devices. Remote nodes dialing up a rack-mounted modem will be able to reach the Total Control NetServer Card, which then provides access to a LAN.

High-end products can cost as much as $35,000 and include dial-up bridge/routers and remote access servers that support remote client-to-LAN links as well as temporary LAN-to-LAN connections. Products in this category contain multiple ports — reaching into the hundreds in a few cases — and support a number of WAN links, including dial-up and leased analog, switched digital, T-1, ISDN Basic Rate Interface and Primary Rate Interface, and even frame relay. Ethernet interfaces on the LAN side are most common, with token ring, Fiber Distributed Data Interface and LocalTalk support also available.

Features that distinguish the high-end products from the others include the type of client workstations supported, such as DOS, Windows, OS/2 or Macintosh.

Many remote access products provide the software needed for the remote node at no cost. Other features commonly found on high-end products are bridging or routing for popular protocols such as Novell's IPX, TCP/IP, AppleTalk or Banyan Systems, Inc.'s VINES.

Another factor distinguishing high-end products is the type of security mechanism used. Authentication protocols such as Kerberos, Password Authentication Protocol (PAP) or Challenge Handshake Authentication Protocol (CHAP) are used internally or in conjunction with a third-party security hardware system to make sure only authorized personnel can reach the LAN.

Other security options include password encryption and dialback methods in which remote users enter a password, hang up and wait for the remote access device to call them back.

High-end products are also a bit more manageable via the Simple Network Management Protocol or a proprietary mechanism. Manageable devices enable administrators to change configuration settings, access privileges or remotely diagnose problems.

Companies offering high-end products include Ascend Communications, Inc., Cisco Systems, Inc., Combinet, Inc., Digital Communications Associates, Inc., IBM, Novell, Rockwell Network Systems, Shiva Corp., 3Com Corp. and Telebit.

Mid-range alternatives cost between $2,000 and $10,000 and are

Continued on page 79

Remote control still has its place

As the ancestor to today's remote LAN access products that link remote nodes into central LANs as if they were directly attached clients, it would seem that remote control software is bound to take its place alongside other network relics.

On the contrary. Remote control software that enables remote workstations to run applications on a central-site LAN node by exchanging keystrokes and screen updates over a WAN link are still useful.

Indeed, remote control software is better suited for intensive database processing applications, where the horsepower of central-site workstations can crunch through numbers and simply supply a response to a remote laptop computer, says Brad Baldwin, principal at Baldwin Network Research in Fremont, Calif. When peer-to-peer access is required from applications running on remote workstations to central-site LAN resources, such as file servers, then remote node technology is better (see graphic).

Remote control software developed in the late 1980s is still around today, including Triton Technologies, Inc.'s CoSession, Norton-Lambert Corp.'s Close-Up and Symantec Corp.'s pcAnywhere. Other remote control products include Ocean Isle Software, Inc.'s Reach Out Total Remote and McAfee Associates, Inc.'s NetRemote.

Early remote control products were panned for their slow response time because they had to send the vast amount of data needed to paint screens on remote workstations over dial-up lines. Software optimization and data compression techniques adopted over the years lessened that concern.

Today, such users as AirTouch Communications of Walnut Creek, Calif., use remote control software to enable remote workers to tap the power of a central-site processor to query a large database and await a response. AirTouch, a spin-off of Pacific Telesis Group, provides cellular and paging services.

To assist with keeping tabs on AirTouch's 4,200 employees, the human resources department uses a large Revelation Technologies, Inc. database application dubbed HR1. The database includes records regarding educational background, job and salary history, plus personal information such as emergency contacts for each employee.

"The size of the database does not lend itself to a remote node solution," says Shelly Sleighel, information systems analyst at AirTouch. "We need the database to execute on a local machine and then have the updates sent to remote users."

AirTouch enables workers in 20 remote offices to access a Cubix Corp. Enhanced Resource Subsystem/Fault Tolerant asynchronous communications server using pcAnywhere. When the remote user dials in, the Cubix server connects to the database, which resides on a file server. Access is controlled through a series of passwords, plus security restrictions within the database itself.

Remote control has worked out so well that Sleighel intends to open up access to the database from international locations that support the firm's worldwide cellular and paging operations.

When to use remote control or remote node

Remote control links are better suited for:

- ✓ Large central-site database queries.
- ✓ Access to central-site DOS applications with character-based screens.
- ✓ Sharing a single central-site application license among multiple remote users.
- ✓ Enabling limited-power laptops to tap CPU strength of faster central-site processors.

Remote node connections are better suited for:

- ✓ Running client portion of client/server-based application on a remote node.
- ✓ Transparent access to central LAN resources.
- ✓ Central sites without enough resources to dedicate workstations to supporting remote control users.
- ✓ Users looking for efficient and effective use of switched digital services such as ISDN with minimal call setup time.

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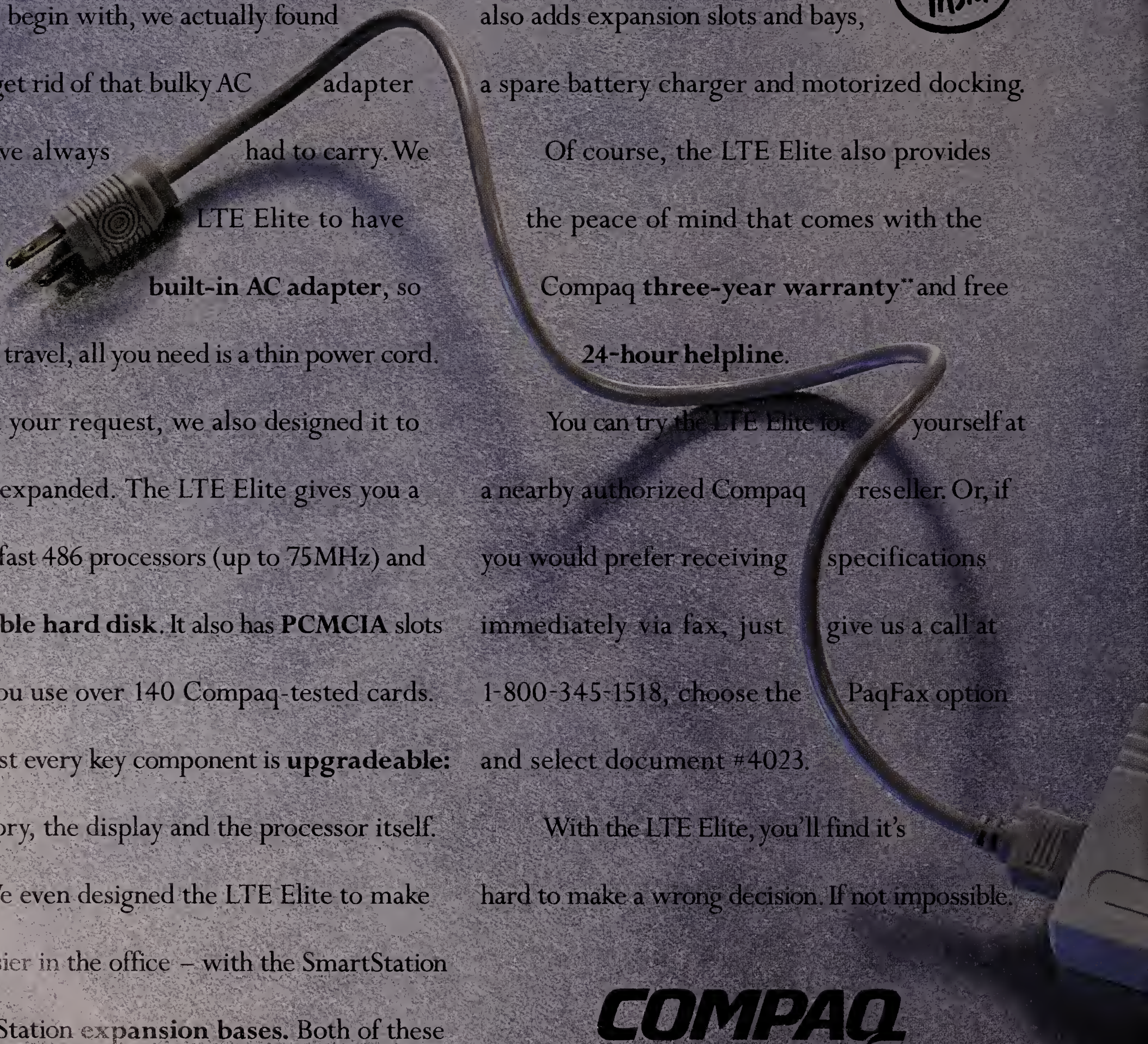

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At Compaq, we always try to give you the notebook features you've asked for. Even if your requests do seem to stretch the laws of physics. Case in point: the Compaq LTE Elite.

To begin with, we actually found a way to get rid of that bulky AC adapter that you've always had to carry. We built the LTE Elite to have its own **built-in AC adapter**, so when you travel, all you need is a thin power cord.

At your request, we also designed it to be easily expanded. The LTE Elite gives you a choice of fast 486 processors (up to 75MHz) and a **removable hard disk**. It also has **PCMCIA** slots that let you use over 140 Compaq-tested cards. And almost every key component is **upgradeable:** the memory, the display and the processor itself.

We even designed the LTE Elite to make things easier in the office – with the SmartStation and MiniStation **expansion bases.** Both of these options feature built-in networking* and SCSI-2 capabilities for an instant desktop configuration– complete with ports for your full-sized monitor and keyboard. The SmartStation also adds expansion slots and bays, a spare battery charger and motorized docking.

Of course, the LTE Elite also provides the peace of mind that comes with the Compaq **three-year warranty**** and free **24-hour helpline**.

You can try the LTE Elite for yourself at a nearby authorized Compaq reseller. Or, if you would prefer receiving specifications immediately via fax, just give us a call at 1-800-345-1518, choose the PaqFax option and select document #4023.

With the LTE Elite, you'll find it's hard to make a wrong decision. If not impossible.

COMPAQ

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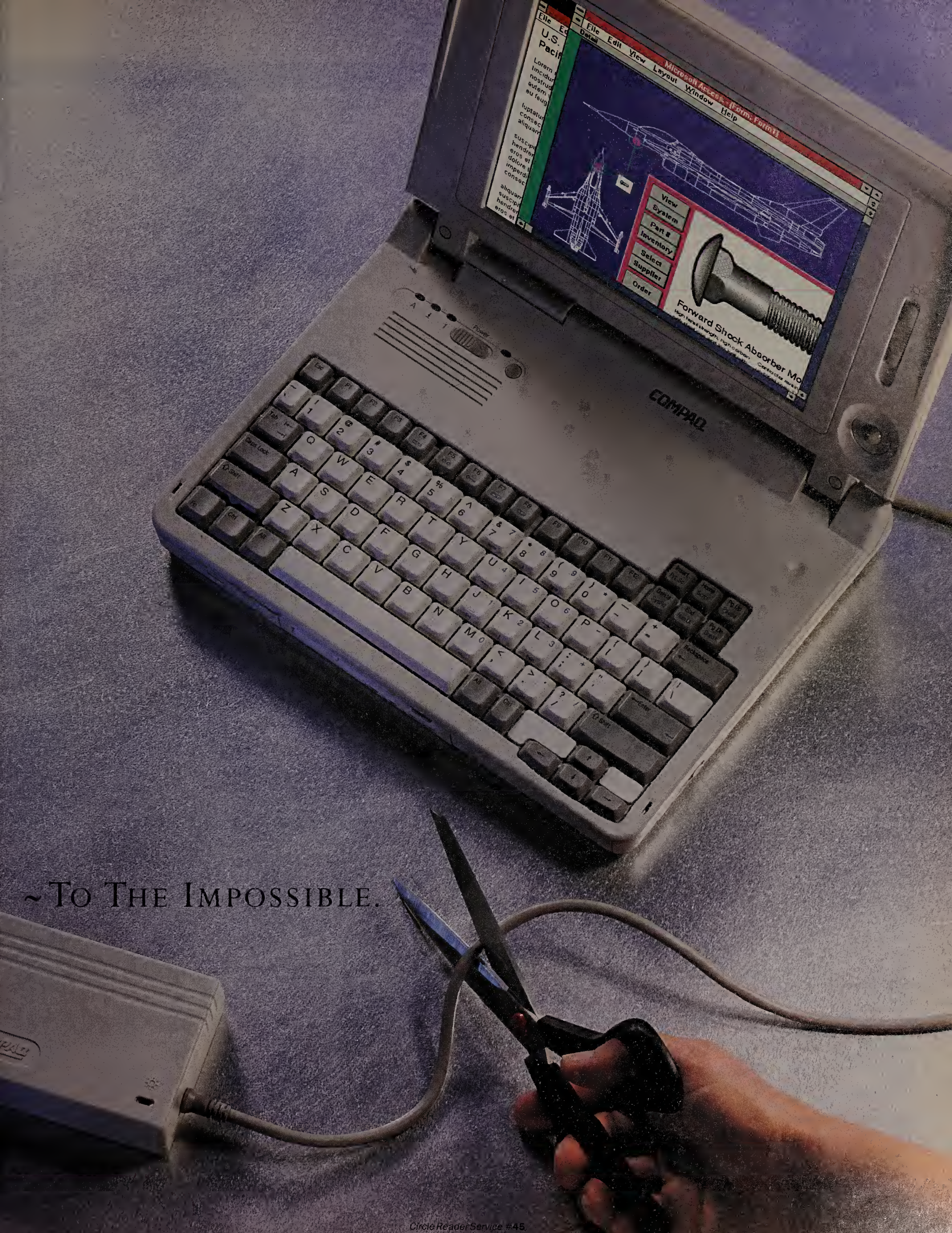
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View
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Circle Reader Service #45

Remote LAN access

Company	Product	Type	Equipment	LANs		NOS support	WANs		Dial-up protocol	Bridging	Protocols routed						Features				Security	Mgmt.	Price/ Warranty
		D = Dial-up bridge/router R = Remote access server RN = Remote node software	H = Hardware S = Software Type: D = DOS M = Macintosh N = NetWare OS = OS/2 W = Windows O = Other	Max. no. of ports	Interfaces E = Ethernet F = FDDI L = LocalTalk T = Token ring O = Other	A = AppleTalk L = LAN Manager LS = LAN Server N = NetWare V = VINES	Max. no. of ports	Type: Max. rate (Bit/sec) A = Analog F = Fractional T-1 FR = Frame relay I = ISDN S = Switched digital	A = ARAP P = PPP S = SLIP O = Other	SR = Source routing ST = Source routing transparent T = Transparent	AppleTalk	DECnet	IPX	SNA	TCP/IP	VINES	Max. no of simultaneous sessions	Inverse multiplexing	Compression ratio	Error detection	A = Authentication D = Dialback E = Encryption	M1 = MIB1 M2 = MIB2 N = NetView P = Proprietary S1 = SNMP 1 S2 = SNMP 2 T = Telnet O = Other	(Months)
Apple Computer, Inc. (800) 538-9696	Apple Remote Access	R	S: M	1	E, L, T	A	16	A: 57.6K I: 64K	A								16		✔	✔	A, D, E	P	$249-$1,599/NA
Arnet Corp. (800) 366-8844	Arnet Ware	R	S: N	128	O	N	128	A: 115.2K	P, S								32						$595-$2,895/ Unlimited
	Arnet ATS	R	H; S: O	16	E	N	NA	NA	S								255				A	M1, M2, S1	$1,595-$2,295/24
	Ports Plus		H; S: N	128	O	N	128	A: 115.2K	P, S								32						$299/ Unlimited
	SYNC/570	R	H	4		N	4	F: 5M FR: 5M	P, S				✔	✔	✔		8						$595-$1,095/ Unlimited
Asante Technologies, Inc. (800) 662-9686	Netras	R	H	1	E	A, L, N	16	A: 57.6K	A, P, S	T	✔		✔		✔		16	✔	✔	✔	D	M1, M2, S1, T	$3,975-$5,999/12
Ascend Communications, Inc. (800) 621-9578	Max	D, R	H; S: O	2	E		4	A: 19.2K F: 1.5M I: 128K S: 3M	P, S, O	T					✔		96	✔	✔	✔	A, D	M1, M2, P, S1, S2, T	$10,000-$35,000/3
	Pipeline 50	D, R	H; S: O	1	E		2	I: 128K S: 128K	P, S, O	T					✔		2	✔	✔	✔	A, D	M1, M2, P, S1, S2, T	$1,495-$2,195/3
	Pipeline 400	D	H; S: O	1	E		4	A: 19.2K F: 2M I: 512K S: 2M	P, S, O	T					✔		23	✔	✔	✔	A, D	M1, M2, P, S1, S2, T	$5,000-$15,000/3
Black Box Corp. (412) 746-5500	Remote Access 1000	R	H; S: N	4	E, T	N	NA	NA	A, D								4		✔	✔	D	N	$4,995-$5,695/12
Cayman Systems, Inc. (617) 932-1100	Gator Access MP	R	H	30	E	N	30	A: 115.2K S: 128K	P, S				✔		✔		30	✔		✔	A	M2, P, S1, T	$2,995-$4,995/24
	GatorRoute iR	D	H	2	E, L	A, N	2	A: 115.2K F: 1.5M FR: 115.2K I: 128K S: 128K	P		✔	✔	✔		✔		2			✔		M1, M2, P, S1, T	$2,495-$3,485/24
	GatorStar iHR	D	H	2	E, L	A, N	2	A: 115.2K F: 1.5M FR: 115.2K I: 128K S: 128K	P		✔	✔	✔		✔		2			✔		M1, M2, P, S1, T	$3,495-$4,485/24
Chipcom Corp. (800) 228-9930	Chipcom LAN Access Server	D, R, RN	H	1	E, T	A, L, LS, N, V	16	A: 57.6K	A, P, S	T	✔		✔		✔		16	✔	✔	✔	A, D, E	M1, M2, S1, S2, T	$4,000-$7,000/12
Cisco Systems, Inc. (408) 526-4000	Access Server	D, R	H	16	E, T	A, N	18	A: 115.2K F: 1.544M FR: 1.544M I: 64K S: 56K	A, P, S, O	SR, ST, T	✔	✔	✔	✔	✔	✔	16				A, D	M1, M2, P, S1, T	$2,995-$6,695/3
Citrix Systems, Inc. (800) 437-7503	WinView for Networks	R	S: D, N, OS, W	15	E, F, T	N	NA	NA	O	SR			✔		✔		15		✔	✔	A, D, E	P	$2,995/3
Combinet, Inc. (408) 522-9020	Everyware 150	D	H	1	E	A, L, LS, N, V	1	I: 512K	D								1	✔	✔	✔	D	P	$990/12
	Everyware 160	D	H	1	E	A, L, LS, N, V	1	I: 512K	D								1	✔	✔	✔	D	P	$1,190/12
	Everyware 200	D	H	1	E	A, L, LS, N, V	1	I: 512K		T							1	✔	✔	✔	D	P	$2,190/12
	Everyware 300 SOHO	D	H	1	E	A, L, LS, N, V	1	I: 512K		T							1	✔	✔	✔	D, E	P	$1,190/12
	Everyware 600	D	H	1	E	A, L, LS, N, V	2	S: 448K	D	T							1	✔	✔	✔	D	P	$2,190/12
	Everyware 900	R	H	1	E	A, L, LS, N, V	1	F: 6.176M I: 6.176M	D	T							23	✔	✔	✔	D	P	$4,99012
CommVision Corp. (800) 832-6526	CommSwitch Series 1400	R	H	18	E, F, T, O	N	576	A: 28.8K F: 1.536M FR: 2.048M I: 128K	A, P, O	SR	✔		✔	✔	✔		576	✔	✔	✔	A, D, E	M2, S1	$11,500-$25,000/12
Compatible Systems Corp. (800) 356-0283	Micro Router 1000R	D	H	1	E		1	A: 115.2K F: 128K I: 128K S: 128K	P, S		✔	✔	✔		✔		1				D	M1, M2, T, O	$1,695/36
Cray Communications, Inc. (800) 367-2729	Branch Office Adapter	D, R	H	2	E, T		11	A: 115.2K F: 1.544M FR: 1.544M S: 56K	P, S	T			✔		✔		200			✔		M2, S1, S2, T	$3,390-$7,000/13
	Remote PC	R	H	1	E		24	A: 38.4K S: 64K	P, S	ST							24		✔	✔	D, E	M2, S1	$2,595-$8,175/12
Cubix Corp. (800) 829-0550	CubixConnect	R	H; S: D, M, N, W	256	E, F, T	N	NA	(1)	O		✔		✔				256			✔	D, E	M2, S2	$10,000-$75,000/12
DigiBoard (800) 344-4273	PC IMAC	D	H	1	E	N	1	I: 128K	P, O	T	✔		✔		✔		2	✔	✔	✔	D		$795/60
	PC IMAC/4	D	H	1	E	N	4	I: 512K	P, O	T	✔		✔		✔		8	✔	✔	✔	D		$995-$3,180/60
	DataFire	D	H	NA	E	N	1	I: 128K	P, O	T	✔		✔		✔		2		✔	✔	D		$595/60
Digital Communications Associates, Inc. (800) 348-3221	Remote LAN Node 3.0	R	H; S: O	32	E, T	L, LS, N, V	32	A: 115.2K I: 64K S: 56K	P	SR		✔	✔	✔	✔	✔	32		✔	✔	A, D, E	M2, S1	$895-$14,395/12

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Remote LAN access

Company	Product	Type	Equipment	LANs		NOS support	WANs		Dial-up protocol	Bridging	Protocols routed						Features				Security	Mgmt.	Price/ Warranty
		D = Dial-up bridge/router R = Remote access server RN = Remote node software	H = Hardware S = Software Type: D = DOS M = Macintosh N = NetWare OS = OS/2 W = Windows O = Other	Max. no. of ports	Interfaces E = Ethernet F = FDDI L = LocalTalk T = Token ring O = Other	A = AppleTalk L = LAN Manager LS = LAN Server N = NetWare V = VINES	Max. no. of ports	Type: Max. rate (Bit/sec) A = Analog F = Fractional T-1 FR = Frame relay I = ISDN S = Switched digital	A = ARAP P = PPP S = SLIP O = Other	SR = Source routing ST = Source routing transparent T = Transparent	AppleTalk	DECnet	IPX	SNA	TCP/IP	VINES	Max. no of simultaneous sessions	Inverse multiplexing	Compression ratio	Error detection	A = Authentication D = Dialback E = Encryption	M1 = MIB1 M2 = MIB2 N = NetView P = Proprietary S1 = SNMP 1 S2 = SNMP 2 T = Telnet O = Other	(Months)
Digital Equipment Corp. (800) 344-4825	DECserver 90M	R	H	8	E, O	A, L, N	NA	NA	P, S, O								8			✓	A	M2, S1, T, O	$1,855-$1,990/12
	DECserver 700	R	H	E	E	A, L, N	NA	NA	P, S, O								16			✓	A	M2, S1, T, O	$2,895-$3,295/12
	DECserver 900TM	R	H	32	E, O	A, L, N	NA	NA	P, S, O								32			✓	A	M2, S1, T	$4,795/12
FTP Software, Inc. (508) 685-3300	PC/TCP OnNet for DOS/Windows	RN	H; S: D, W	1	O	L, LS, N, V	1	(1)	P, S						✓		1		✓	✓	A, D	M2, S1, T	$450/1
	PC/TCP Networking Software for DOS/Windows 3.0	RN	H; S: D, W	1	O	L, LS, N, V	1	(1)	P, S						✓		1		✓	✓	A, D, E	M2, S1, T	$350/1
	PC/TCP Networking Software for OS/2	RN	H; S: OS	1	E, F, L, T, O	L, LS, N, V	1	(1)	S						✓		1		✓	✓	A, D, E	M2, S1, T	$400/1
Funk Software, Inc. (800) 828-4146	WanderLink	R	H; S: D, N, W	64	E, T	N	NA	NA	P				✓				64		✓	✓	D, E	P	$295-$1,695/3
Gandalf Technologies, Inc. (800) 426-3253	LANLine 5225i Remote Bridge	D	H	1	E	A, L, LS, N, V	2	A: 28.8K F: 2.048M S: 56K	O	T							2		✓	✓		M1, M2, P, S1, T	$2,495/24
	LANLine 5242i Telecommuter Bridge	D	H	1	E	A, L, LS, N, S	1	I: 128K	O	T							1		✓	✓		M1, M2, P, S1, T	$995-$1,195/24
	LANLine 5240i ISDN Bridge	D	H	1	E	A, L, LS, N, V	1	I: 128K	O	T							2	✓	✓	✓		M1, M2, P, S1, T	$2,695-$2,895/24
	Xpressway RLAN	D	H	108	E	A, L, LS, N, V	32	F: 2.048M I: 2.048M S: 56K	O	T			✓		✓		64		✓	✓		M1, M2, S1	$15,000-$30,000/24
Global Village Communications, Inc. (800) 736-4821	OneWorld Remote Access	R	H	2	E, L	A	2	A: 19.2K	A								2		✓	✓	D	P	$1,099-$1,899/36
IBM (800) 342-6672	LAN Distance	R, RN	H; S: OS, W	1	E, T	L, LS, N, V	128	A: 115.2K F: 2M I: 64K S: 56K	P	SR, T			✓	✓	✓	✓	128	✓		✓	A, D, E	M2, N, P, S1	$595 per connection server; $69 per client/3
ISDN Systems Corp. (703) 883-0933	DYNA-Bridge	D	H	23	E, T	A, L, LS, N, V	3	I: 384K	P	SR, ST, T							23	✓	✓		A	M2, S1	$2,595/12
	FX-56	R	H; S: D, OS, W	NA	E, T	L, LS, N, V	1	FR: 56K	P	ST, T			✓		✓		32		✓		D	M2	$1,085/12
	FX-BRI	R	H; S: D, N, W, O	NA	E, T	L, LS, N, V	1	I: 128K	P	SR, ST, T							2	✓	✓		A		$499/12
	MPAX	D	H	2	E, F, T	A, L, LS, N, V	1	FR: 1.544M	P, S	ST, T			✓		✓		32	✓	✓			M2	$2,535-$3,935/12
J&L Information Systems (818) 709-1778	ChatConnect	D, R, RN	H; S: N	64	E, F, T	N	NA	NA	A, O		✓		✓				64		✓	✓	A, D	N, P	$7,000-$50,000/12
Microcom, Inc. (800) 822-8224	LANexpress	R, RN	H	12	E, T	L, LS, N, V	12	A: 28.8K	O	SR, ST, T			✓				12		✓	✓	A, D, E	M1, M2, S1	$3,499-$11,899/12
Motorola Inc., Transmission Products Division (205) 430-8000	BitRUNR	D, R, RN	H	1	E, T	A, L, N, V	16	A: 115.2K F: 1.544M FR: 115.2K I: 128K S: 128K	A, P, S	T			✓		✓		16	✓	✓		A, D	M1, M2, S2, T	$3,000-$5,000/NA
Multi-Tech Systems, Inc. (800) 328-9717	MultiComRN Gateway (RNGCOM)	RN	S: D, W	1	E	N	4	A: 115.2K	O								4		✓			P, O	$799/24
	MultiComRN Gateway (RNIOX)	R	H; S: D, W	1	E	L, N, V	32	A: 115K F: 128K S: 128K	O								32		✓			P	$1,799-$3,500/24
Network-1 Software and Technology, Inc. (800) 638-9751	Net1-AccessPlus	R	H	160	E, F, L, T, O	A, L, LS, N, V	30	A: 28.8K F: 1.544M FR: 4M I: 144K S: 56K	A, S, O		✓	✓			✓		160	✓		✓	A, D, E	P, T	$12,500-$18,500/3
Newport Systems Solutions, Inc. (714) 752-1511	LAN2LAN/MPR Enterprise	D	S: N, O	4	E, F, L, T, O	A, L, LS, N, V	24	A: 230K F: 2.048M FR: 2.048M I: 128K S: 2.048M	P	SR, T	✓		✓		✓		768	✓	✓	✓	A	M1, M2, P, S1, S2, O	$795-$3,595/24
	PC2LAN/X.25	RN	S: D, N, W	NA	NA	N	1	A: 128K	O				✓		✓		768			✓		P	$149/24
	LAN2PC	RN	S: D, N, W	NA	NA	N	1	A: 230K F: 2.048M FR: 2.048M I: 128K S: 2.048M	P				✓		✓		24	✓	✓	✓		P	$1,195-$2,490/24
	LAN2LAN/MPR Remote Office	D	S: N, O	4	E, F, L, T, O	A, L, LS, N, V	2	A: 230K F: 2.048M FR: 2.048M I: 128K S: 2.048M	P	SR, T	✓		✓		✓		2	✓	✓	✓	A	M1, M2, P, S1, S2, O	$795-$2,790/24
Novell, Inc. (800) 638-9273	LANWorkPlace for DOS and MS Windows	RN	S: D, W	2	E, F, T, O	L, LS, N	1	S: 56K	P, S						✓		1			✓	D	M1, M2, S1, S2, T	$399-$12,995/NA

NETWORK WORLD TECHNICAL SEMINARS

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Implementing ATM, Frame Relay and SMDS

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Attending this 2-day seminar will help you . . .

- Compare the technologies and operation of ATM, Frame Relay and SMDS.
- Evaluate the application/technology matrix — which broadband technology is best suited to your specific applications.
- Discover the driving forces behind ATM, and how cell switching technology is revolutionizing business communication.
- Prepare for the next generation of internetworking challenges: Frame Relay/SMDS, Frame Relay/ATM and SMDS/ATM connections.
- Learn the signaling protocols that are used to establish ATM or Frame Relay connections.
- Understand the differences between circuit switching, packet switching and cell switching.
- Consider broadband network management architectures and protocols, such as the Local Management Interfaces (LMI), and the Customer Network Management (CNM) systems.
- Contrast the operation of Frame Relay and X.25 protocols.
- Learn how existing transport technologies such as TCP/IP and Novell's NetWare can be integrated with broadband protocols.
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Remote LAN access

Company	Product	Type	Equipment	LANs		NOS support	WANs		Dial-up protocol	Bridging	Protocols routed						Features				Security	Mgmt.	Price/Warranty
		D = Dial-up bridge/router R = Remote access server RN = Remote node software	H = Hardware S = Software Type: D = DOS M = Macintosh N = NetWare OS = OS/2 W = Windows O = Other	Max. no. of ports	Interfaces E = Ethernet F = FDDI L = LocalTalk T = Token ring O = Other	A = AppleTalk L = LAN Manager LS = LAN Server N = NetWare V = VINES	Max. no. of ports	Type: Max. rate (Bit/sec) A = Analog F = Fractional T-1 FR = Frame relay I = ISDN S = Switched digital	A = ARAP P = PPP S = SLIP O = Other	SR = Source routing ST = Source routing transparent T = Transparent	AppleTalk	DECnet	IPX	SNA	TCP/IP	VINES	Max. no of simultaneous sessions	Inverse multiplexing	Compression ratio	Error detection	A = Authentication D = Dialback E = Encryption	M1 = MIB1 M2 = MIB2 N = NetView P = Proprietary S1 = SNMP 1 S2 = SNMP 2 T = Telnet O = Other	(Months)
Novell, Inc.	NetWare Connect	R	S: N	64	E, F, L, T	A, N	64	A: 115K S: 64K	A, O		✔		✔		✔		64		✔	✔	D	M1, M2, S1, O	$595-$5,995/3
Penril Datability Networks (301) 921-8600	LinkUp 8	D, R, RN	H; S: D, W	1	E	N	8	A: 57.6K I: 64K S: 56K	P, S				✔		✔		8		✔	✔	A, D	M2, S1, T	$2,999/12
	CSX7100 Communications Server	R	H	1	E		128	A: 57.6K I: 64K	P, S, O						✔		32		✔	✔	D	M1, M2, S1, T	$3,500-$27,600/12
RAD Data Communications, Inc. (201) 529-1100	LAN Ranger MBE-1/D	R	H; S: D, N, OS, W	1	E	L, LS, N	2	A: 115.2K F: 512K FR. 512K I: 512K S: 512K	O	T							2				D	M2, S2	$1,100-$1,300/12
	LAN Ranger MBE-8/D	R	H; S: D, N, OS, W, O	8	E	L, LS, N	2	A: 115.2K F: 512K FR: 512K I: 512K S: 512K	O	T							2				D	M2, S2	$1,400-$1,600/12
	LAN Ranger MBE-PC	RN	S: D, N, OS, W, O	NA	NA	L, LS, N	1	A: 115.2K F: 512K FR: 512K I: 512K S: 512K	O	T							NA				D		$60-$250/12
	LAN Ranger MBE-RAS	R	H; S: O	1	E	L, LS, V	8	A: 115.2K F: 1.536M FR: 2.048M I: 128K S: 64K	O	T							8				D	M2, S2	$2,800/12
	LAN Ranger MBE-RAS/A	R	H; S: O	1	E	L, LS, N, V	8	A: 115.2K F: 512K FR: 512K I: 512K S: 512K	O	T							8				D	M2, S2	$2,995/12
	LAN Ranger TRE-1/D	R	H; S: D, N, OS, W		T	L, LS, N	2	A: 115.2K F: 512K FR: 512K I: 512K S: 512K	O	ST, T							2				D	M2, S2	$1,450-$1,650/12
	LAN Ranger TRE-8/D	R	H; S: D, N, OS, W		T	L, LS, N	2	A: 115.2K F: 512K FR: 512K I: 512K S: 512K	O	T							2				D	M2, S2	$1,750-$1,950/12
	LAN Ranger TRE-PC	RN	H; S: D, N, OS, W	1	T	L, LS, N	1	A: 115.2K F: 512K FR: 512K I: 512K S: 512K	O	ST, T							1				D		$80-$300/12
	LAN Ranger TRE-RAS	R	H; S: O	1	T	L, LS, N, V	8	A: 115.2K F: 1.536M FR: 2.048M I: 128K S: 56K	O	ST, T							8				D	M2, S2	$3,995/12
	LAN Ranger TRE-RAS/A	R	H; S: O	1	T	L, LS, N	8	A: 115.2K	O	T							8				D	M2, S2	$3,895/12
	RADRing	R	H; S: O	72	T	A, L, LS, N, V	18	A: 115.2K F: 512K I: 128K S: 64K	O	ST							18				D	M2, S2	$2,450-$15,250/12
Retix (800) 255-2333	LINKXchange LX150, 160	D	H	1	E		1	I: 128K	O	T							1		✔	✔	D	M1, S1, T	$1,495-$1,795/12
	LINKXchange LX200	D	H	1	E		1	I: 128K	O	T							1		✔	✔	A, D	S1, T	$2,995/12
Rockwell Network Systems (800) 262-8023	NetHopper NH-P	D	H	1	E	N	1	A: 28.8K	P, O				✔		✔		1		✔	✔	A, D	M1, M2, S1, T	$1,695-$1,850/12
	NetHopper NH-SYNC+	D	H	1	E	N	2	A: 28.8K I: 128K S: 64K	P, O				✔		✔		1		✔	✔	A, D	M1, M2, S1, T	$2,195-$2,350/12
	NetHopper NH-5	R, RN	H; S: D, N, W, O	1	E	N	5	A: 28.8K	P, O				✔		✔		5		✔	✔	A, D	M1, M2, S1, T	$4,495-$4,995/12
	RoadHopper	RN	H; S: D, N, W, O	NA	NA	N	NA	NA	P, O				✔		✔		1		✔	✔	D	M1, M2, S1	$69-$399/12
SFA DataComm, Inc. (800) 270-2669	XenoLink	D, R	H	2	E, T	N	12	A: 115K F: 1.544M FR: 2.048M I: 128K S: 2.048M	S, O	O			✔		✔		120			✔		P, S1, T, O	$2,800-$4,400/12
Shiva Corp. (800) 458-3550	LANRover 3.0	R	H	1	E, T	A, L, LS, N	8	A: 115K I: 128K S: 128K	A, P, S	SR, ST	✔		✔	✔	✔		8		✔	✔	A, D, E	M1, M2, N, P, T	$2,899-$8,499/12
	LANRover/Plus 3.0	D, R	H	1	E, T	A, L, LS, N	8	A. 115K I: 128K S: 128K	A, P, S	ST	✔		✔	✔	✔		8		✔	✔	A, D, E	M1, M2, N, P, S1, S2, T	$2,899-$8,499/12

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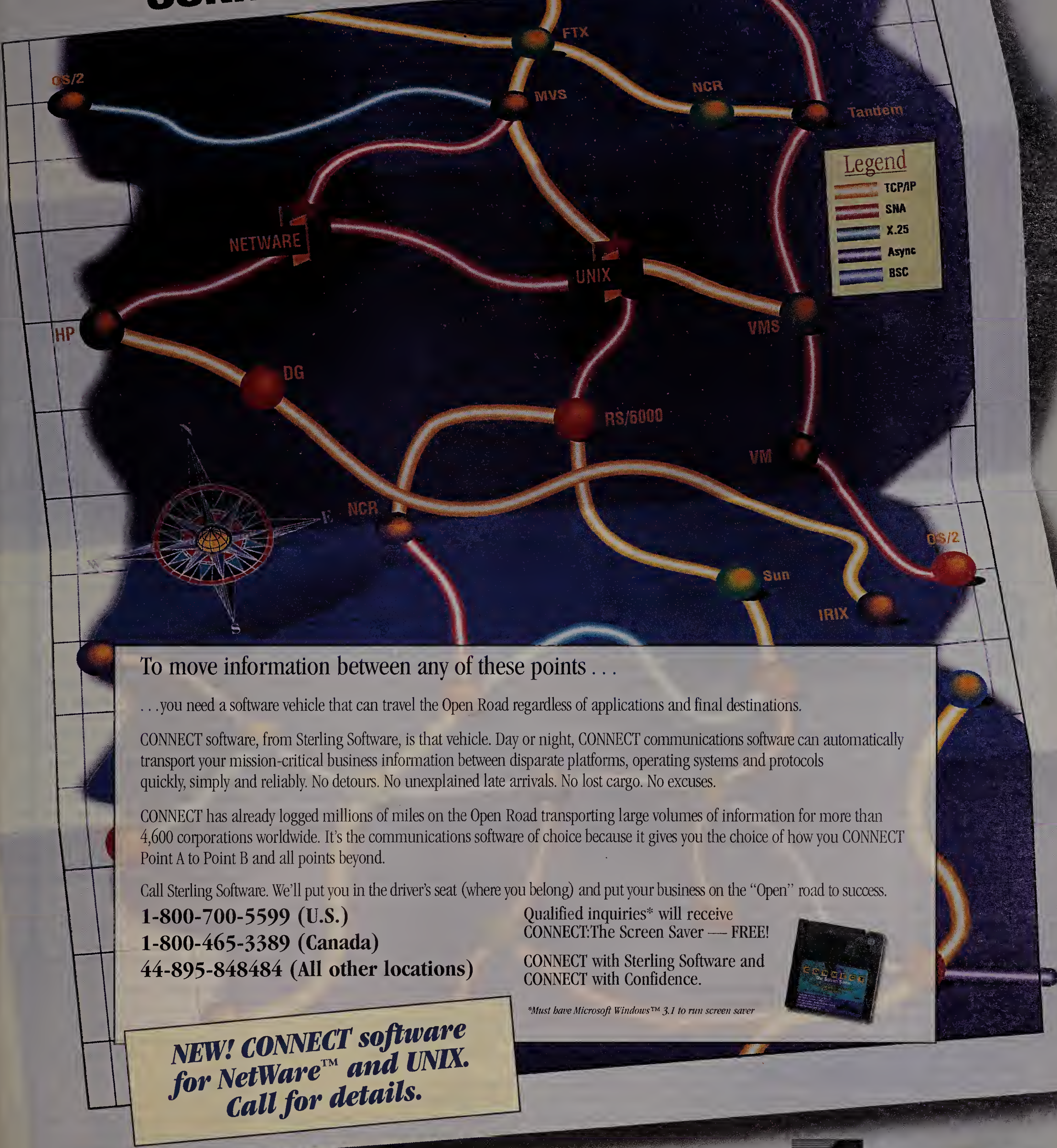

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Remote LAN access

Company	Product	Type	Equipment	LANs		NOS support	WANs		Dial-up protocol	Bridging	Protocols routed						Features				Security	Mgmt.	Price/ Warranty
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Shiva Corp.	NetModem	D, R	H	1	E	A, L, LS, N	1	A: 57.6K	P		✔		✔				1		✔	✔	A, D, E	P	$1,699/12
3Com Corp. (800) 638-3266	Access Builder	D, R	H	1	E, T	A, L, LS, N, V	16	A: 115.2K F: 2.048M FR: 2.048M I: 128K S: 56K	A, P, S	SR, T	✔	✔	✔		✔	✔	16	✔	✔	✔	A, D, E (2)	M1, M2, S1, T	$2,495-$7,295/12
Team Software, Inc. (713) 784-4480	Channels	D, R, RN	H; S: D, N, OS, W, O	(1)	E, F, L, T, O	L, LS, N, V	(1)	(1)	S	T		✔	✔		✔		10K			✔		T	$549 for 10 interactive users/3
Telebit Corp. (800) 835-3248	NetBlazer	D, R	H; S: D, M, N, W, O	3	E, T	A, N	32	A: 115.2K F: 128K FR: 128K I: 128K S: 1.544M	A, P, S, O		✔		✔		✔		32	✔	✔	✔	A, D	M2, S1, T	$2,299-$8,195/12
Telematics International, Inc. (305) 772-3070	ACP 50	R	H	1	E		2	A: 64K FR: 1.544M I: 64K	P, S					✔	✔		24			✔	D	M2, P, S1	$4,000-$20,000/6
Webster Computer Corp. (800) 457-0903	MultiPort/LT	R	H	5	E, L	A	4	(1)	A		✔	✔			✔		4		✔	✔	D	M1, M2, S1, S2	$1,995/12
Xylogics, Inc. (800) 892-6639	Annex Three	R	H	1	E	A, N	64	(1)	A, P, S, O				✔		✔		64			✔	A, D	M2, P, S1, T	$4,424-$7,916/60
	Micro Annex NCS	R	H	1	E, T	N	2	(1)	S				✔				2		✔	✔	D		$995-$1,795/12
	Micro Annex XL	R	H	1	E	A, N	16	(1)	A, P, S, O				✔		✔		16			✔	A, D	M2, P, S1, T	$2,261-$3,389/60

Products highlighted by color were selected for The Short List.

Chart compiled by Cheri Paquet

FOOTNOTES:
(1) Supports access to WAN services through third-party hardware.
(2) Supported through external devices.

ARAP = AppleTalk Remote Access Protocol
MIB = Management Information Base
NA = Not applicable
NOS = Network operating system
PPP = Point-to-Point Protocol
SLIP = Serial Line Interface Protocol

NETWORK WORLD
SHORT LIST
1 9 9 4

Remote LAN access products

The Short List highlights products Network World recommends you closely examine during the purchasing process for remote LAN access products. Because user requirements vary widely, products on The Short List meet unique mixes of the following criteria: support for multiple network operating systems and net protocols; the ability to work with multiple types of remote clients; support for a breadth of WAN interfaces; availability of integrated or third-party security and network management features; and ease of installation, configuration and operation.

Products with dial-in, dial-out, combined remote node and remote control capabilities were given additional consideration. These criteria meet the needs of users with multivendor enterprise networks. Your criteria may differ.

■ Ascend Communications, Inc.
Pipeline 50, Pipeline 400 and Max

Pipeline and Max products offer some of the widest WAN and bandwidth management options. The products' built-in interfaces provide connections to virtually all analog and digital WAN services, with plans to support frame relay soon.

On the LAN side, the products only support Ethernet connections today. Among the bandwidth management options is inverse multiplexing, which enables a high-speed datastream from a remote client to be spread across multiple low-speed WAN links. The products have also been certified for use in a number of countries around the globe.

■ Digital Communications Associates, Inc.
Remote LAN Node (RLN) 3.0

RLN's high points are its scalability and upper layer protocol independence. The software-based product comes bundled with an Intel Corp. 80486-based personal computer or runs on existing 80486-based machines with as many as 32 ports. The product works in Ethernet and token-ring environments, and makes use of analog, ISDN switched 56K bit/sec or X.25 links.

Other key features include Simple Network Management Protocol-based management and integrated support for TCP/IP's Bootstrap Protocol and Reverse Address Resolution Protocol.

■ Microcom, Inc.
LANexpress

A hardware architecture that includes integrated, bus-attached modems and Advanced Parallel Technology that redirects serial communications to faster parallel ports for improved performance sets this product apart. The server functions as a transparent bridge and filters unwanted traffic from the analog WAN links it supports.

For security, LANexpress includes password, encryption, fixed and roving dialback, and works with Security Dynamics, Inc.'s SecurID product line. The product comes with Carbon Copy, Microcom's remote control software.

■ Novell, Inc.
NetWare Connect

Running as a NetWare Loadable Module, this software offering gives NetWare 3.X and 4.X managers everything they need to support remote access. NetWare Connect provides remote access for NetWare clients and Apple Computer, Inc. Macintoshes running the AppleTalk Remote Access Protocol over asynchronous, X.25 or ISDN lines. A separate Novell software package enables DOS and Windows workstations to connect to NetWare LANs using the Point-to-Point Protocol or Serial Line Internet Protocol. The product can make use of existing NetWare management features.

■ Rockwell Network Systems
NetHopper family

This family of dial-up Ethernet bridge/routers gets good marks from users. The products have a modular architecture and support the firm's Socketmodem technology, which makes upgrading as easy as swapping out WAN interface boards. The NetHopper NH-SYNC+ provides investment protection, allowing the net manager to start with low-speed analog lines and migrate to faster ISDN or switched 56K bit/sec links.

■ Shiva Corp.
LANRover/Plus 3.0

Shiva has one of the most mature central-site remote access servers on the market, and the firm's advanced features show its heritage. Its LANRover/Plus 3.0 supports access to Ethernet and token-ring LANs over a wide array of WAN links, including frame relay. Integration with the NetWare bindery directory for enhanced security and good management using Shiva's proprietary interface or SNMP results in a product that is easy to install and configure.

■ 3Com Corp.
Access Builder

This remote access server provides tight integration with 3Com's already well established line of bridges, routers and hubs. As a result of this synergy, Access Builder can be managed with 3Com's Windows-based Transcend Network Management software.

On the LAN side are Ethernet and token-ring interfaces. On the WAN side are interfaces for analog and digital lines, plus frame relay and ISDN. Security includes password, dialback, password encryption including Kerberos, plus integration with the NetWare Bindery and NetWare 4.X's NetWare Directory Services.

■ Telebit Corp.
NetBlazer

Its innovative security and management features set NetBlazer apart. For security, the product includes password encryption, Kerberos authentication plus integration with the Security Dynamics, Inc. SecurID products. On the management side, the product supports SNMP and includes an SNMP proxy agent for monitoring and controlling the external modems it uses.

In TCP/IP environments, NetBlazer includes some innovative, bidirectional filtering that enables net managers to block packets going to or coming from a certain IP address or range of IP addresses as well as limit the services those addresses can reach, creating a good Internet fire wall.

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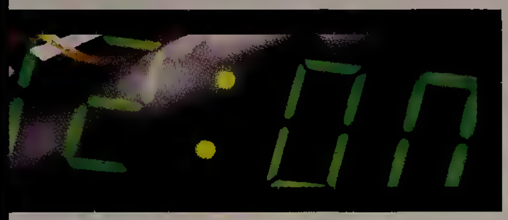

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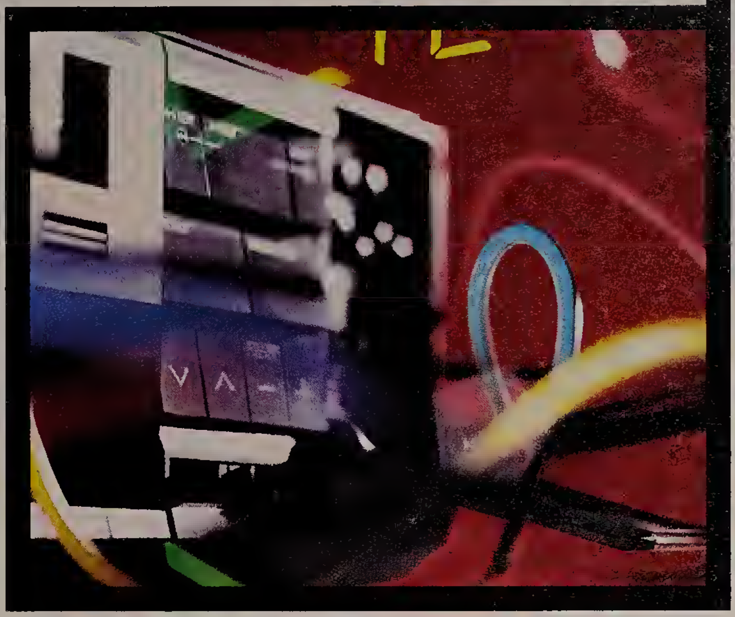

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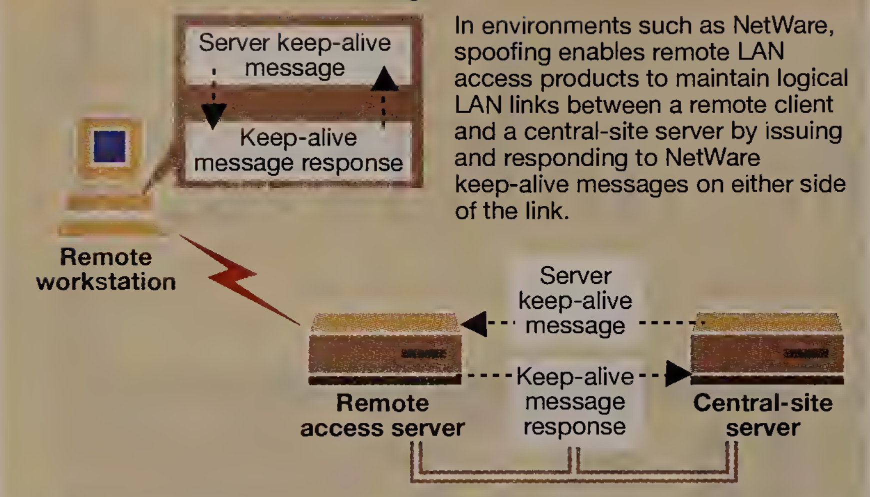
Continued from page 67

more closely targeted at remote client-to-LAN applications, or simply support a lower number of ports or protocols for remote LAN-to-LAN applications. Another distinguishing characteristic of mid-range solutions is a limitation in the type of WAN connections available, such as products that target analog dial-up only or ISDN BRI only.

High-end vendors such as Ascend and Combinet have offerings in this segment, as well. Others include Citrix Systems, Inc., Compatible Systems Corp., ISDN Systems Corp., Penril Datability Networks, Retix and Xylogics, Inc.

Remote spoofing

Figure 1


Server keep-alive message
Keep-alive message response
Remote workstation
Server keep-alive message
Keep-alive message response
Remote access server
Central-site server

In environments such as NetWare, spoofing enables remote LAN access products to maintain logical LAN links between a remote client and a central-site server by issuing and responding to NetWare keep-alive messages on either side of the link.

GRAPHIC BY SUSAN SLATER

SOURCE: BALDWIN NETWORK RESEARCH, FREMONT, CALIF.

For basic remote client-to-LAN applications, there are products from such companies as DigiBoard that consist of a personal computer or workstation add-on board and remote node software that provide an analog or ISDN dial-up link to a central-site PC acting as a remote access server.

Companies such as RAD Data Communications, Inc. have products that cut across all segments. Key factors that influence the price of products in any segment include the type of high-speed serial interfaces provided, whether modems are integrated into the remote access device or must be purchased separately, and the pricing structure for remote client software. For some vendors, unlimited client software is included at no additional charge, while others zap you on a per-user basis.

PERFORMANCE COUNTS

"The No. 1 issue for the remote user is the performance of the remote access solution, and the key criterion for that is the execution speed of applications," says Kelly McGovern, a Microcom, Inc. senior product manager.

There are two major bottlenecks that remote access solutions must overcome, McGovern says. One occurs at the remote site where Windows applications are limited to 19.2K bit/sec by the speed at which data can be transferred across the remote PC's serial link to a modem.

Microcom uses its recently developed Advanced Parallel Technology (APT) to reroute the application traffic from the serial port to a parallel port, which increases the speed to around 300K bit/sec. Microcom also manufactures modems with parallel interfaces instead of serial ones, which enable them to take advantage of APT.

The second bottleneck occurs at the central server site, where the asynchronous ports struggle to keep up with the data coming to and from the LAN. Microcom incorporates modem functions inside its remote access server chassis so the modem-to-LAN data connection is made over a bus instead of a serial port. Integrating modem functions inside the server eliminates installation and cabling issues and also makes the device more manageable. Microcom can also attach their internal modems to the server bus, which yields a higher throughput.

Another way to improve performance is to stifle chatty LAN protocols. Segregating session keep alive messages and other forms of administration traffic on the LAN or client side can help optimize WAN bandwidth, and that is just what some products are designed to do.

"Novell's IPX is a very chatty protocol," says Tom Caldwell, product marketing manager at Rockwell Network Systems. "The clients and servers exchange network configuration information on a frequent basis. But the WAN link should be reserved for end-user traffic. Therefore, we built spoofing and filtering into our product to optimize the use of the WAN facility."

The spoofing function operates on the server side of the connection and keeps the remote session active even when the WAN link is idle. For example, if the remote user leaves for lunch, the dial-up or ISDN link will drop out because of inactivity. When the user returns, the link is reestablished but the session is still connected, obviating the need to log on again. The filtering function operates at both the client and server sides of the connection, preventing Routing Information Protocol routing table exchanges and NetWare Service Advertising Protocol broadcasts from chewing up precious WAN bandwidth (see Figure 1).

For the end user, this translates to real cost savings. "Under most ISDN BRI service tariffs, the end user is billed for the actual amount of traffic that goes over the B channel," Caldwell says. "With the spoofing and filtering functions in operation, only actual user data goes over the link."

A number of other vendors including Gandalf Technologies, Inc. and 3Com offer similar spoofing and filtering capabilities. Analysts say spoofing and filtering will be a basic feature in the near future. Leading remote access vendors such as Shiva give this prediction some credence by promising spoofing support in future versions of their products.

In the meantime, using bridging functions to transfer data between remote clients and central LANs can also keep WAN traffic to a minimum by using bridge-like features to block certain traffic from reaching the WAN link. It also offers the benefit of installation simplicity, says Bruce Laird, vice president of marketing at Combinet. Because bridges are transparent to upper layer protocols, end users do not need to modify their operating system environments — everything looks and acts as if it were locally attached.

Combinet's Everyware product line consists of remote access devices that provide WAN links over switched 56K bit/sec, ISDN or leased digital lines. For ISDN applications, Everyware products support BRI at the remote client site and either BRI or PRI at the central site, which yields a second advantage — bandwidth on demand.

"With two 64K bit/sec B channels available on a BRI line, the Everyware product can dynamically adjust for varying user bandwidth requirements," Laird says. If one 64K bit/sec channel is inadequate, the Everywhere bridge can set up a second channel, yielding 128K bit/sec total throughput before compression. Likewise, when traffic falls below a preset threshold, one, or even both, of the channels can be disconnected, without dropping the logical connection. "The end user reaps the benefits of ISDN's extremely quick setup time — on the order of 300 msec — which minimizes their WAN link charges," Laird says.

MORE POWER IN THE BOX

While ISDN support is becoming more important, many users also need flexibility when selecting among a variety of analog or digital WAN connections. Ascend's Pipeline family offers that flexibility by enabling users to choose between ISDN and other types of WAN links on an as-needed basis.

Ascend's bandwidth-on-demand functions make it possible for users

Continued on page 81

When remote access needs to be blocked

Opening up a LAN to access by anyone from just about anywhere screams out for top-notch security features. While remote LAN access devices provide some security, users are turning to add-on products for industrial-strength features.

These third-party products use standard protocols such as the Password Authentication Protocol (PAP) and the Challenge Handshake Authentication Protocol (CHAP) to validate remote user access to LAN resources. An emerging standard called Remote Authentication Dial In User Service (RADIUS), developed by router and internetworking device vendor Livingston Enterprises, Inc. of Pleasanton, Calif., is making it possible for a single security database to support both PAP and CHAP, as well as other security methods (see graphic).

Firms specializing in remote access security devices include LeeMah DataCom Security Corp. of Hayward, Calif.; CryptoCARD, Inc. of Buffalo Grove, Ill.; Digital Pathways, Inc. of Mountain View, Calif.; Security Dynamics, Inc. of Cambridge, Mass.; and SmartDisk Security Corp. of Naples, Fla.

The remote LAN access security market is an outgrowth of devices originally designed to protect private branch exchanges in the early 1980s.

Those devices took on a new role as users began tapping the IETF's Point-to-Point Protocol to connect remote nodes to LAN resources. That is when PAP and CHAP were developed.

PAP provides a simple way for a remote device to establish its identity, a process known as authentication. When the link is first established, the remote device sends identification information about itself along with a user-entered password to the central site. If this communication is authenticated, the connection attempt is allowed to continue until the process — called a two-way handshake — succeeds.

Unfortunately, the ID and password are sent unencrypted, yielding no protection from an eavesdropping intruder with a protocol analyzer.

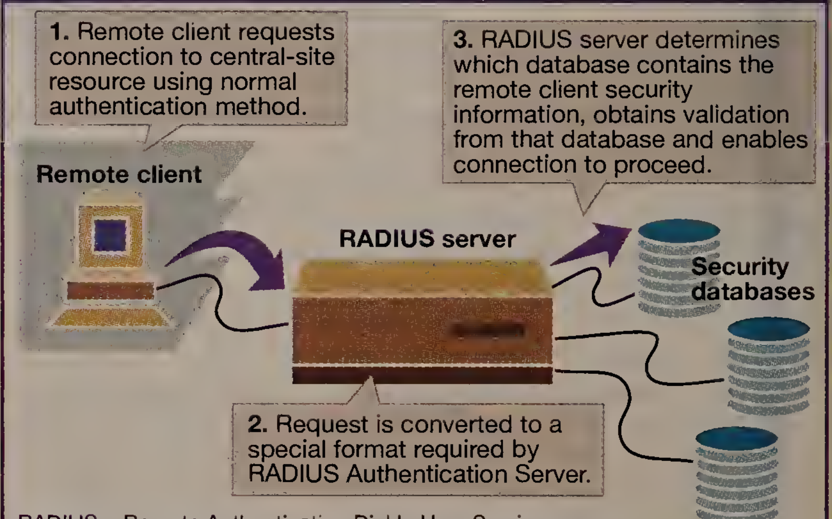
CHAP uses a three-way handshake and is, therefore, more difficult to crack. After the link is established, the central site sends a challenge message to the remote device, which then responds with a calculated value known only to the remote and central-site devices.

LeeMah's products are based on a challenge/response system in which remote users are challenged by a central-site device. The response is provided by the remote user via an access code and a LeeMah hardware authentication device called the InfoKey. The InfoKey issues a cipher code when the user access code is entered. A database at the central site checks the access and cipher codes for a match prior to granting system access.

To implement a challenge/response system, the authentication device is inserted between the remote user's modem and the telephone line. To access the central system, the user adds the access code at the end of the modem's dialing sequence. The remote and central modems perform a handshake, and the LeeMah central security system, called the TraqNet, verifies the user's access code. The central system then sends a challenge, which is encrypted using the Data Encryption Standard (DES). When the authentication device receives the challenge, it responds with a DES-encrypted message.

The security data accessed via PAP, CHAP and other protocols has to be stored in dedicated databases. RADIUS was developed to provide a single point of access to those databases. Through a series of conversion routines, RADIUS directs traffic to the appropriate database.

Security RADIUS


1. Remote client requests connection to central-site resource using normal authentication method.
Remote client
RADIUS server
3. RADIUS server determines which database contains the remote client security information, obtains validation from that database and enables connection to proceed.
Security databases
2. Request is converted to a special format required by RADIUS Authentication Server.

RADIUS = Remote Authentication Dial In User Service

GRAPHIC BY SUSAN SLATER

SOURCE: LIVINGSTON ENTERPRISES, INC., PLEASANTON, CALIF.

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*Circle Reader Service #***51**

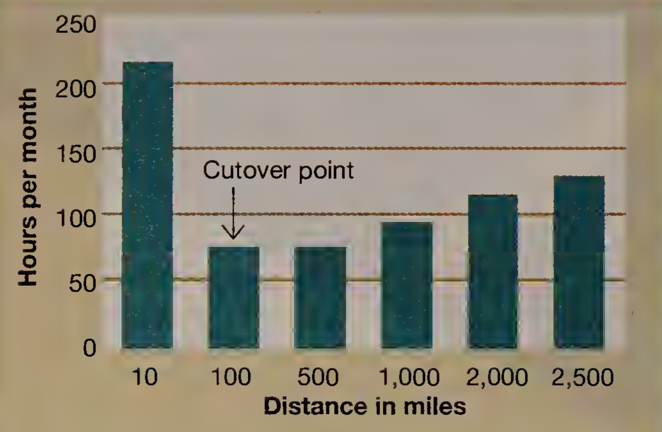
Continued from page 79

to tap combinations of ISDN BRI, PRI and other digital services to match application requirements. For example, an inverse multiplexing function can spread 256K bit/sec of traffic across four 64K bit/sec B channels on two BRI circuits or four channels on a T-1-based PRI link. A dynamic bandwidth allocation process detects when application bandwidth needs change and can add switched 56K bit/sec or ISDN B channel links to accommodate. A third function, a 4-to-1 data compression ratio, can boost throughput even further.

This flexibility has given faculty, staff and students at the University of Illinois at Urbana-Champaign have a new way of working from home. They use Ascend Pipeline 50 products and Ameritech ISDN links to access an Ascend Max remote access server that interfaces to a central LAN.

The search for a remote access solution began when the university's Computing and Communications Services Office did a traffic study of remote users and found that as many as 100 users would keep a dial-up analog line active at all times for Internet access, says Charley Kline, senior research programmer at the university. Other users were clamoring for higher speed connections to support Mosaic, multimedia and videoconferencing applications.

Reaching the remote dial-up cutover point



Users spending 75 hours a month on a 100-mile long dial-up remote LAN access link may find it more economical to acquire a 56K bit/sec leased line.

SOURCE: BALDWIN NETWORK RESEARCH, FREMONT, CALIF.

Computing and Communications Services Office staff sat down at the drawing board and designed an ISDN-based solution, which includes BRI and PRI access lines off of the university's Centrex service. Remote users within a five-mile radius of the campus may join the system.

Each remote user, or group of users, is provided with an Ascend Pipeline 50 unit that has an ISDN BRI connection on the network side and an Ethernet attachment unit interface (AUI) on the user side. The AUI makes it possible for remote users to extend an Ethernet link to compatriots at the same location, forming a small LAN.

An Ascend Max at the central site connects to an ISDN PRI on the network side. On the user side is a LAN link providing access to a campus-area network and other resources such as a link to the Internet. Remote users, therefore, have access to any campus resource including the Internet at 64K or 128K bit/sec.

"Remote users pay approximately $110 per month for this service, which includes the cost of their BRI line and the Pipeline 50 server at their location," Kline says. "All they need to provide is a PC, Macintosh or other workstation with an Ethernet card, and they have access to any on-campus resource."

MAKING IT SECURE

Providing nifty remote access options is one thing. Keeping unauthorized people from using those options is another, claims Nancy Thomas, network consultant at Connecticut Mutual Life Insurance Co. in Hartford.

The company finds security a key concern as it turns to remote LAN access to improve communication between hundreds of agents nationwide and the home office. In the process, Thomas hopes to improve customer relations.

The remote insurance agents use these connections to download policy information, rate tables or query the extensive database of reference material. Presently, Connecticut Mutual's headquarters is configured to support 25 incoming lines — a number that may increase if the system's popularity grows.

"We opened up our host-based 3270 applications to remote access when we moved to a client/server architecture," Thomas says. "But with that move, we needed to maintain the security of the information and also consider the speed at which it could be transferred to Windows-based clients."

Other factors for Thomas include the memory requirements for the client side and the reliability of the connection once it is established. "Price is always a consideration, but the need for a sound, working solution is paramount."

Thomas and her group are in the process of testing DCA's Remote LAN Node 3.0 product, which provides authentication, dialback and encryption security, as well as Novell's NetWare Connect, which provides dialback security. The company is also an early user of the remote access services being built into Windows clients.

As users such as Thomas open up the corporate network to remote sites, vendors are including a number of internal authentication protocols such as Kerberos, PAP and CHAP into their products. In some cases, remote access vendors tap the security and password databases found in such network operating system (NOS) directories as NetWare's Bindery.

Another approach to providing security is to work in conjunction with external security hardware provided by such companies as LeeMah DataCom Security Corp.

In other cases, partnerships are struck between remote access and security hardware vendors, providing a comprehensive solution. For example, Security Dynamics, Inc. of Cambridge, Mass., maker of the SecurID authentication system, integrates its technology with remote access products from Cisco, Microcom, Shiva, Telebit, 3Com and Xylogics.

Providing security for a large number of remote users is also a chief concern for Bill McGuire, communications services analyst at Sprint-United Telephone of Florida, a local carrier in Winter Park. More than 1,500 of the carrier's staff of 7,000 require remote access to the corporate network. Once granted access, users can tap the corporate IBM Systems Network Architecture network, more than 100 LANs and Sprint Corp.'s vast corporate network.

The carrier selected LeeMah's TraqNet system, which sits in front of central-site

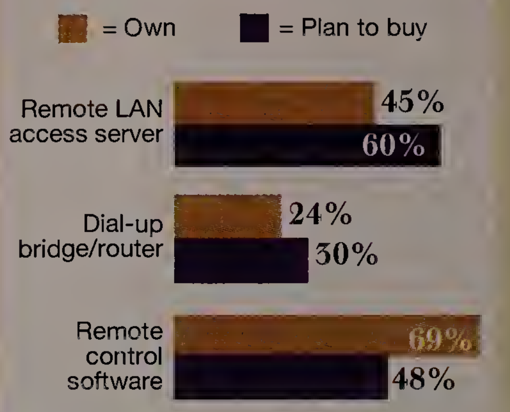
Continued on page 86

Reader views on remote LAN access

Based on 100 interviews.

Do you own/plan to buy a remote LAN access product within the next 12 months?

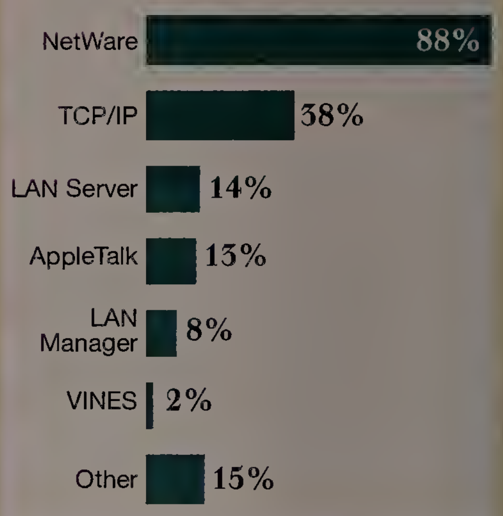
(Multiple responses allowed.)



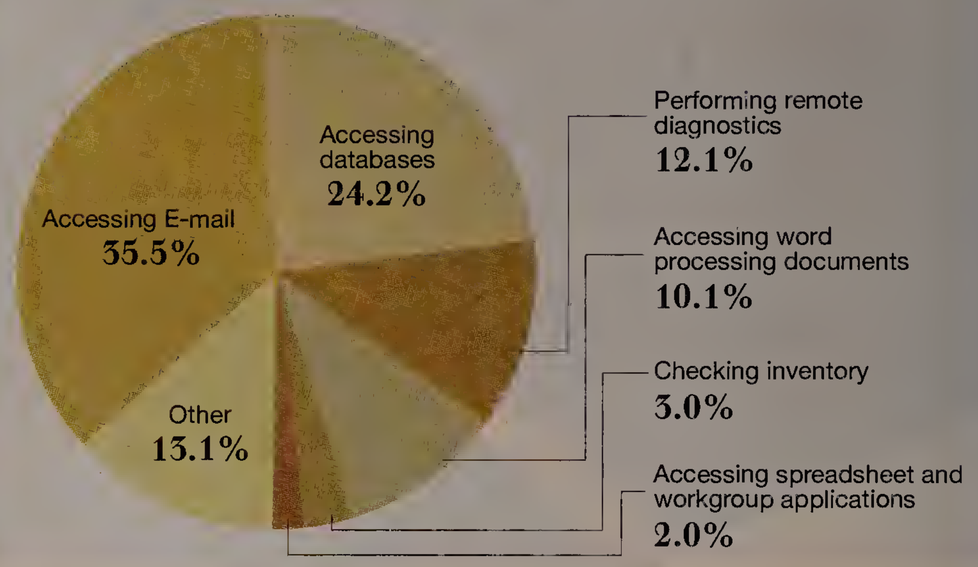
Note: Of the respondents, 9% were deliberating between purchasing a remote access server and a dial-up device.

What type of LAN do/will you access?

(Multiple responses allowed.)

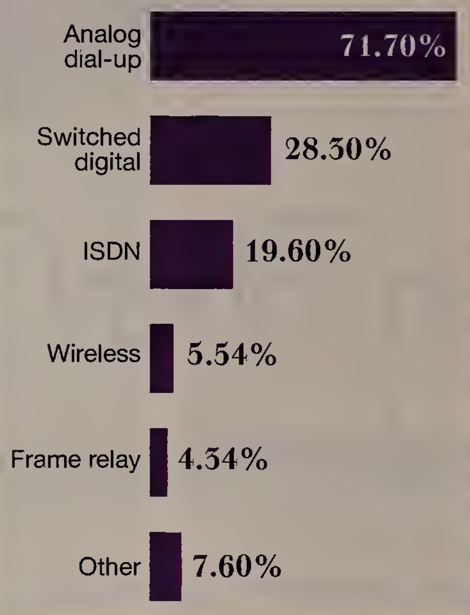


For what primary purpose do/will you use remote LAN access?



What type of WAN service do/will you use to support your remote LAN access product?

(Multiple responses allowed.)



Key service and support issues

Based on a highest possible score of 3.

Ease of installation	2.39
On-site service included in warranty	2.22
Toll-free hot line	1.91

What is your most important criterion when selecting a remote LAN access product?

Based on a highest possible score of 6.

Throughput and performance	4.79
Security	4.07
LAN protocol support	3.55
Multiple simultaneous sessions	3.50
Price	3.16
SNMP support	2.09

Focus Data, Inc., an independent market research firm in Framingham, Mass., conducted this survey. Focus Data specializes in gathering primary data from end-user organizations regarding their enterprise network environment and needs. For more information on Focus Data services, call Mona Dabbon at (508) 626-2556. ***Focus Data is preparing a report about the remote LAN access market.***

GRAPHIC BY SUSAN SLATER

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Continued from page 81

modems for 96 lines that provide access to communications servers and hosts supporting Digital Equipment Corp.'s Local Area Transport- and TCP/IP telnet-based traffic.

Remote users access the TraqNet system, enter an access code and then hang up. The TraqNet system searches its database for a predefined callback number and returns the call.

Users at sites that do not have a modem callback number, such as users on vacation or away on business, must use another LeeMah device, called the InfoKey. The InfoKey is also a hardware device that sits in front of central-site modems. When the user tries to access the modem, InfoKey passes encrypted information to the TraqNet system. When that connection is verified, the TraqNet communicates with the host, and then the modem connections end-to-end are established.

"Our users have tested the TraqNet system with a variety of PC-compatible platforms and communication software packages, and have found its architecture to be extremely versatile and reliable," McGuire says (see story, page 79).

REMOTE NODE, CONTROL COMBO

Combining remote access for mobile workers with remote network administration were the objectives of James Grafmyre, manager of information systems at Otsuka America, Inc., a health care products company in Seattle. Otsuka has a small Novell LAN at headquarters that supports another office in San Francisco and more than 50 traveling salespeople.

"The original objective was remote network administration, allowing us to check the file server from home, restart the electronic mail server, initiate a backup, and so on," Grafmyre says. "After the word got out, some of our users wanted remote access so that they could connect to the LAN when they were away on a business trip or working from home."

> "The Funk software is brainless to install. To add another user, we give them a disk containing the client software, along with a few written instructions."

Grafmyre had experience with remote control packages but was not impressed with their slow performance within Windows environments. Instead, he chose Funk Software, Inc.'s WanderLink remote access server software and Proxy remote control package for Windows, obtaining both remote node and remote control capabilities.

"The Funk software is brainless to install," Grafmyre says. "To add another user, we give them a disk containing the client software, along with a few written instructions. With this approach, even a novice network user can be fully operational within a short period of time."

Other users found companies that provide traditional terminal server and remote control products a viable option for remote LAN access. Dan Blanchard, director of network systems and services for the University of Massachusetts at Amherst picked Xyplex, Inc.'s Access Server Software to give more than 20,000 students and faculty access to campus LAN resources, including information services, libraries and E-mail servers.

Access Server Software runs on a variety of Xyplex's terminal servers and hub modules. It gives remote PCs, Apple Macintoshes and PowerBooks, as well as Unix-based workstations access to AppleTalk, NetWare and TCP/IP LANs. *Network World* was unable to obtain detailed information about the Access Server Software in time to include it in the Buyer's Guide chart starting on page 71.

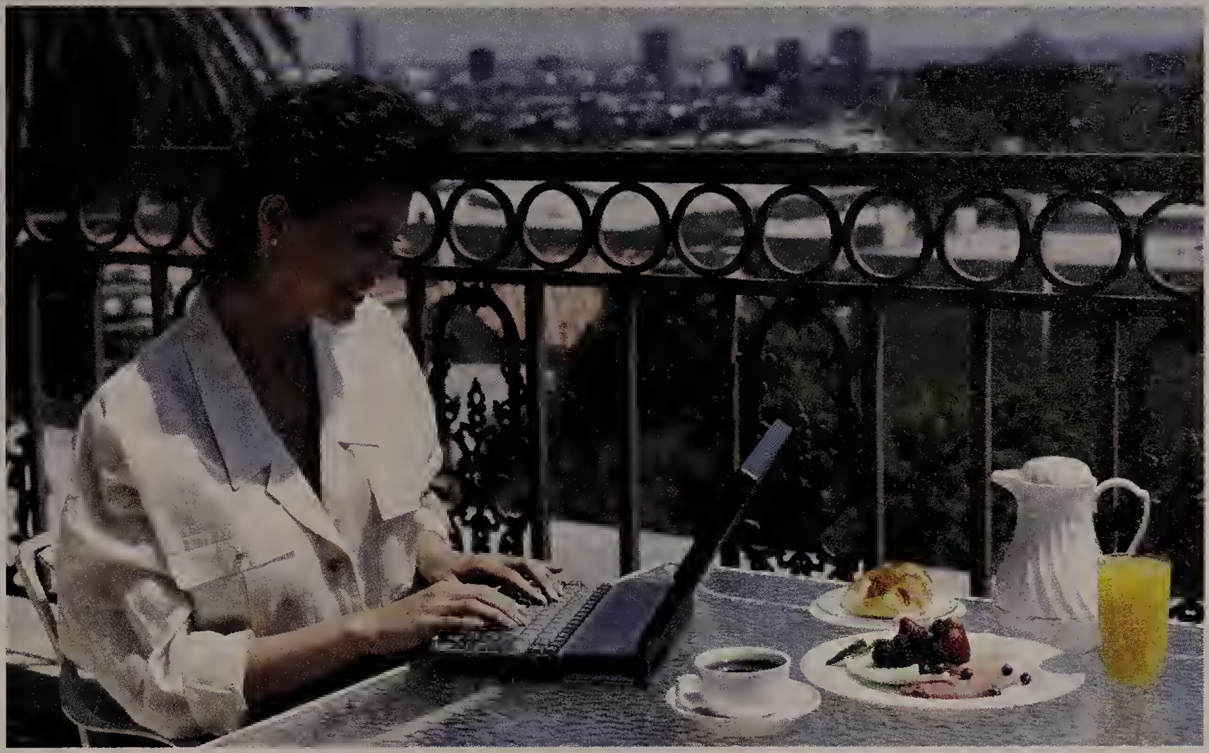
"One of our key selection criteria was the ease of student use," Blanchard says. "We have over 70 remote access servers, with up to 16 ports each. When users connect to a Xyplex server, they are presented with a menu, not just a prompt for more information." The menu presents them with options and instructions for access to university resources.

"This menu was very important to us, as the cost of training a population with such a high turnover rate as students would be prohibitive," Blanchard says. "In addition, the Xyplex software can be remotely configured and upgraded using BOOTP, easing the administration overhead for our staff." BOOTP is the Bootstrap Protocol, a part of TCP/IP.

Managing remote access products can be simplified if it is integrated with a high-level network management package, which seems to be a growing trend, says Najib Khouri-Haddad, product-line manager at 3Com. The firm's Access Builder remote access server, which supports remote client-to-LAN and remote LAN-to-LAN bridging and routing for Ethernet and token-ring nets, can be managed by 3Com's Transcend Network Management

Continued on page 87

TELECOMMUTING HAS REDEFINED THE WORKPLACE



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Letters

Continued from page 62

able to buy 10M to 100M bit/sec solutions even though they may only be using the 10M bit/sec ports for the short term.

Paul Lozowick
Product marketing manager, networks and communications
Digital Semiconductor
Digital Equipment Corp.
Maynard, Mass.

No comparison

Regarding David Chappell's article "OLE taunts SNA to bullfight" (*Collaboration*, Oct. 31, page 16):

I was impressed by Mr. Chappell's creative thinking in positioning Microsoft Corp.'s OLE as an alternative to IBM's Systems Network Architecture. Surely he could point out various network routing schemes, and link and session protocols supported by OLE. How about OLE for flow control over frame relay and ATM?

Frankly, even Microsoft did not know that OLE was a networking architecture. Conversely, IBM and thousands of SNA users did not know until this article appeared that SNA was really a technology for implementing object-oriented applications.

Atul Kapoor
Principal
Kaptronix, Inc.
Haworth, N.J.

Chappell's response: Given the marketing power of the phrase "object-oriented," I'm surprised no one has yet claimed that SNA is in fact a technology for implementing object-oriented applications. As for the rationality of comparing SNA and OLE, however, Mr. Kapoor should note that the distributed aspects of OLE and COM operate over lower layer protocols like TCP/IP. These protocols certainly do provide network routing schemes and flow control.

A more important point, though, is this: In the article, SNA is a metaphor. The point was not that OLE and COM, and its supporting protocols, provide the same services as SNA, but rather that they stand a reasonable chance of achieving the ubiquity in the client/server world that SNA enjoys in mainframe networking. While the title NW *chose to give the article may perhaps have obscured this point, the article itself did not.*

Buyer's Guide

Continued from page 86

application — the same product used to manage the company's hubs, bridges and routers.

Transcend Network Management runs under Hewlett-Packard Co.'s OpenView, IBM's NetView for AIX or Sun-Soft, Inc.'s SunNet Manager and eases the remote access server configuration and administration chores for the net manager. Xylogics' remote access products can be managed by Cabletron Systems, Inc.'s Spectrum and SynOptics Communications, Inc.'s Optivity platforms. Telebit has a proxy agent that enables its remote access products to be managed by SNMP-based workstations.

> **Collaboration between NOS developers and remote access server vendors is a trend starting to take hold.**

IN THE REMOTE FUTURE

Collaboration between NOS developers and remote access server vendors is a trend starting to take hold, says Chris Connor, technical marketing manager at Shiva. In fact, Shiva assisted Microsoft with the development of the remote access services being incorporated into Windows 95. Those services are designed in an open architecture that will enable Windows 95 clients to interoperate with remote access servers from a number of vendors.

"One of the design goals for Windows 95, and the current Windows NT 3.5 operating systems, is access to the enterprise network from remote clients," Connor says. "As part of our joint development efforts, we have tested the interoperability between Windows 95 and Shiva's LANRover using IPX, NETBEUI and TCP/IP."

Vendors will also be building larger remote access servers as more people take to the road. "In the future, remote access products must scale to support large numbers of clients — getting beyond the average 16 to 32 users today to several thousand remote nodes," Baldwin says.

"In the next few years, some firms will have half of their staffs — possibly thousands of employees — telecommuting on at least a part-time basis," he says. "As a result, remote access servers must rise to the occasion. This may require a different way of looking at remote access, perhaps concentrating remote access lines from different sites into a phone company central office and then running a dedicated T-1 line to the corporate headquarters."

➡Miller is an *NW* contributing editor and president of DigiNet Corp., a Denver-based data communications engineering firm. He has authored seven books on LAN/WAN technologies, including *Analyzing Broadband Networks*. Miller may reached via the Internet at mark@diginet.com.

Help desk

Continued from page 2

Usenet newsgroup by viewing a file in your home directory called .newsrc. You can use Tin and other news reader programs to search your .newsrc file. Within Tin, press the backslash key and you will be prompted for a key word. You can find more about many of the Usenet newsgroups in the news.lists newsgroup.

If you are connecting to the Internet via a TCP/IP, SLIP or PPP connection, the first time you connect, your client will download a list of all available newsgroups — if your host provides a large number, this could take a few minutes. You can then scroll through the list or search for a particular word within a newsgroup name.

ISDN USERS' FORUM UPDATE

In our Oct. 3 Help Desk, we provided contact information for the North American ISDN Users' Forum.

Victoria Marney-Petix, chief consultant at Marpet Technical Services in Freemont, Calif., suggests readers on the West Coast may also be interested in the Pacific Rim ISDN Users' Forum (PRIDUF). For information about becoming a PRIDUF member, contact Teresa Buczkowska at the University of Technology in Sydney, Australia, via E-mail at tb@ee.uts.edu.au. PRIDUF was launched last year and is growing rapidly, with many U.S. members.

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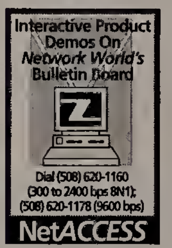
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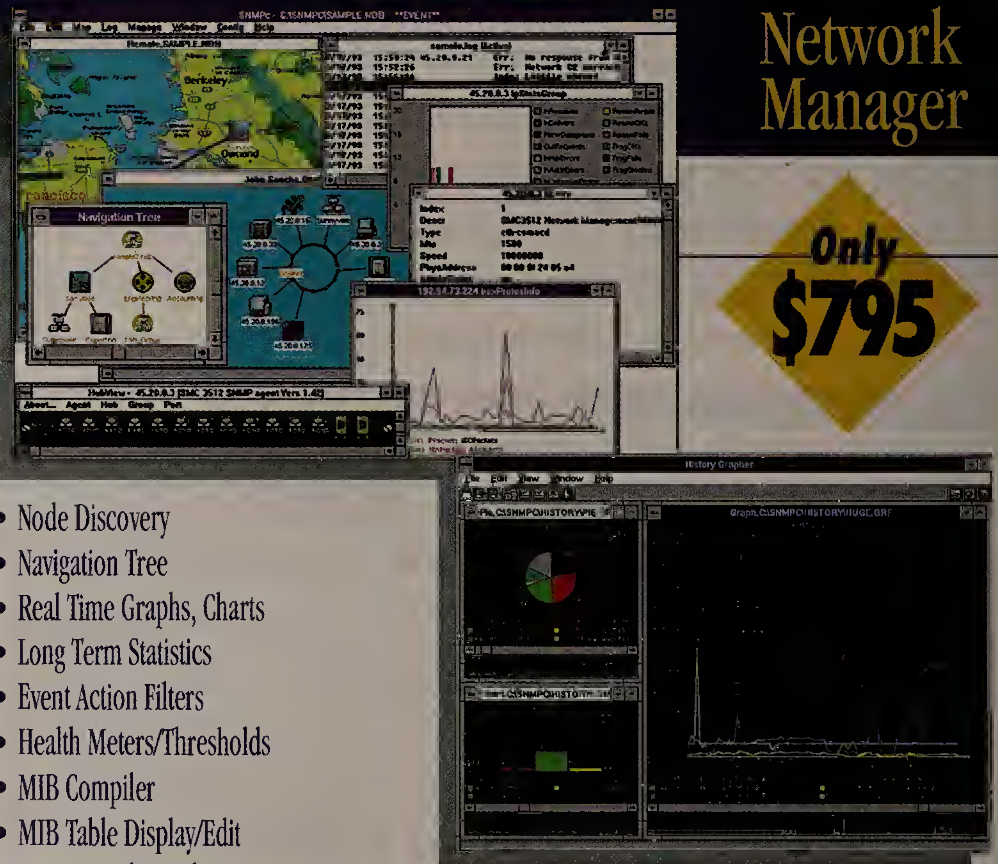

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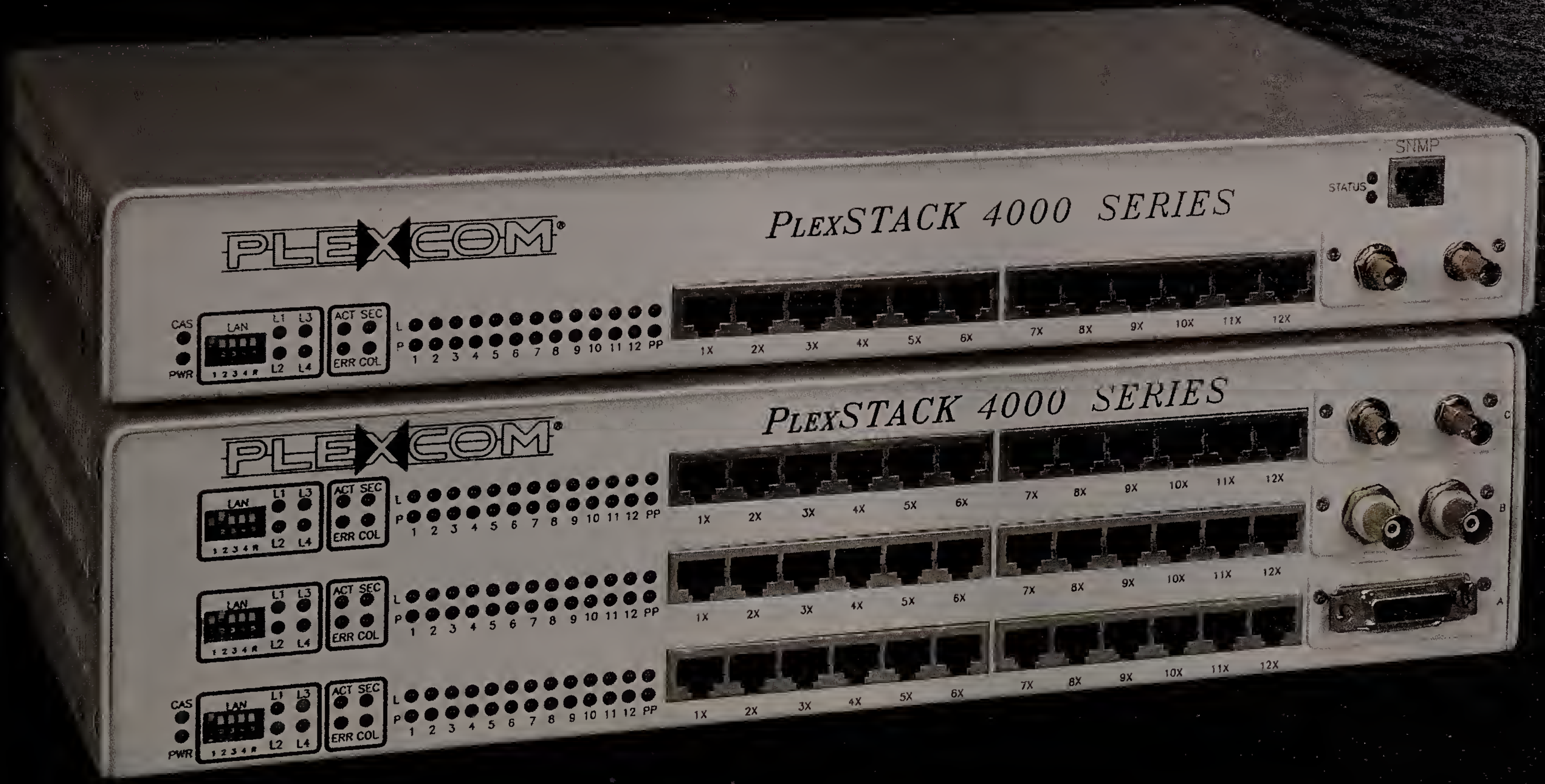

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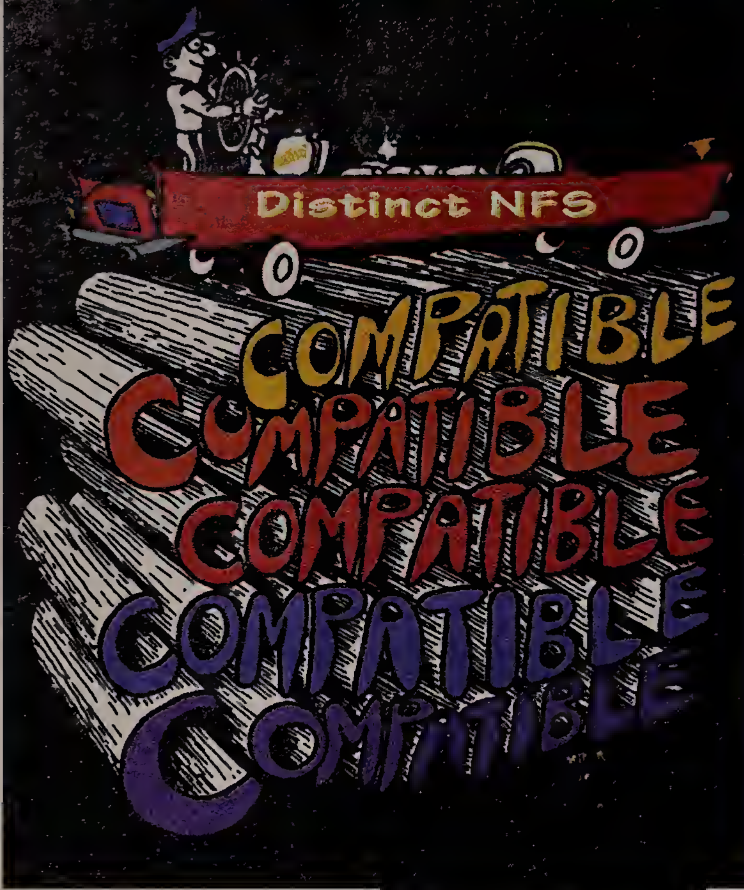

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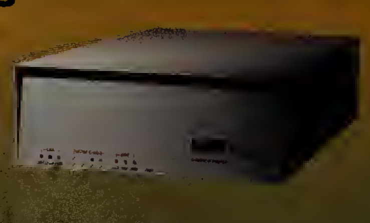

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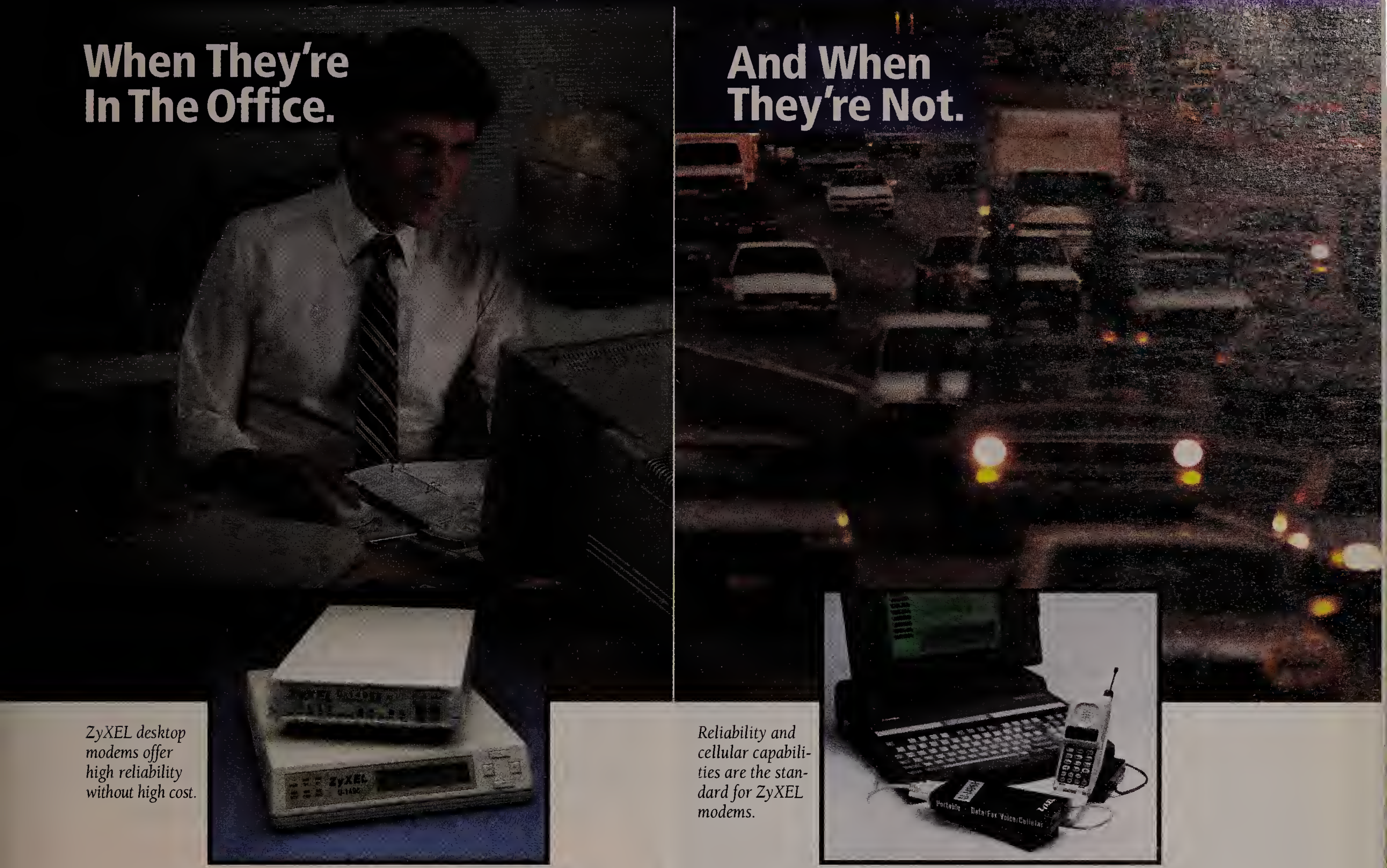

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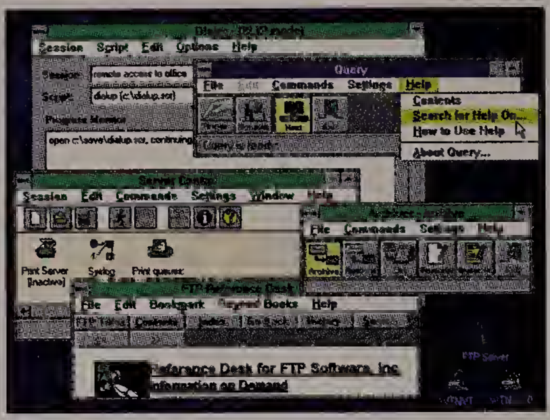

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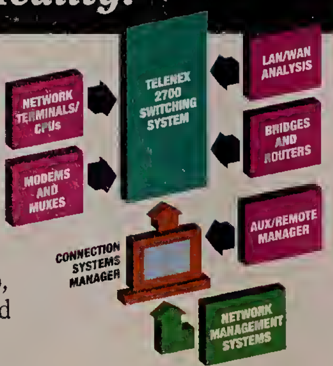

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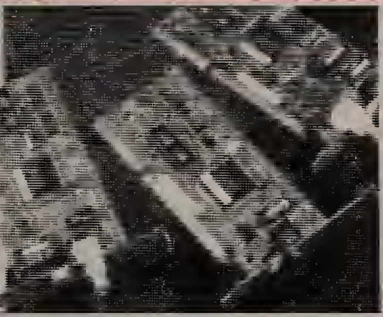

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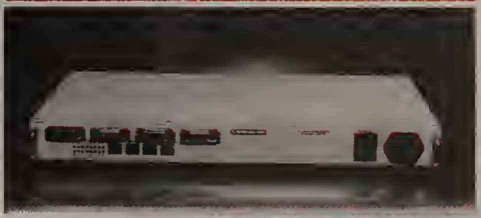

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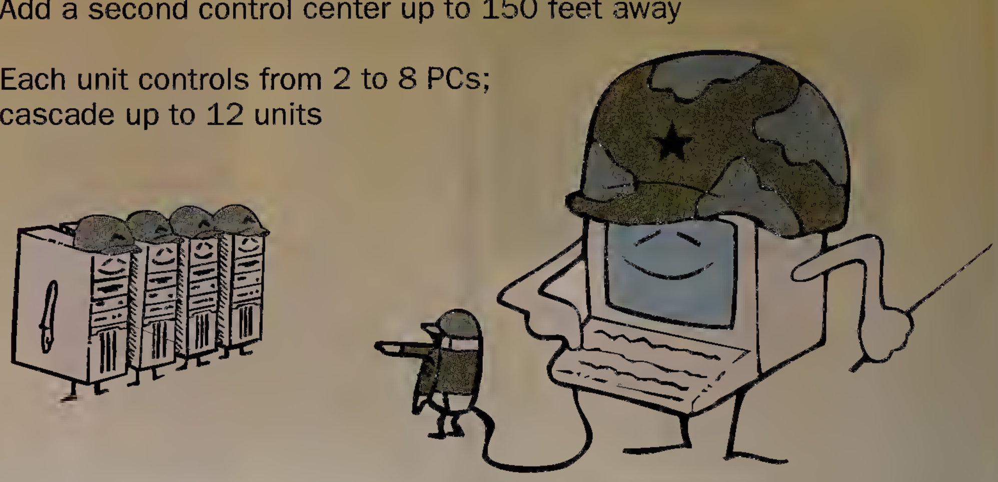

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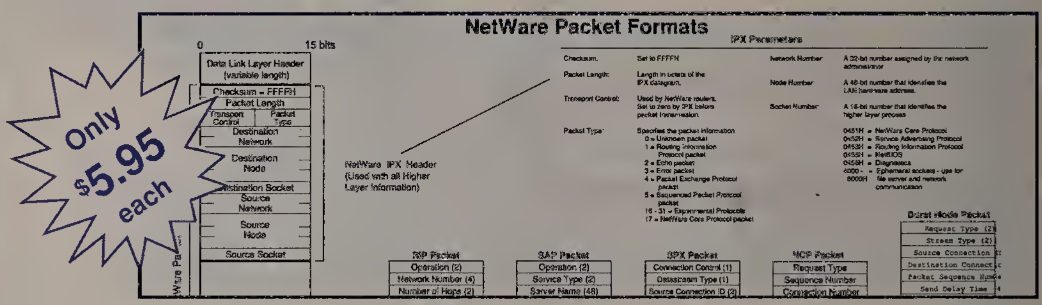

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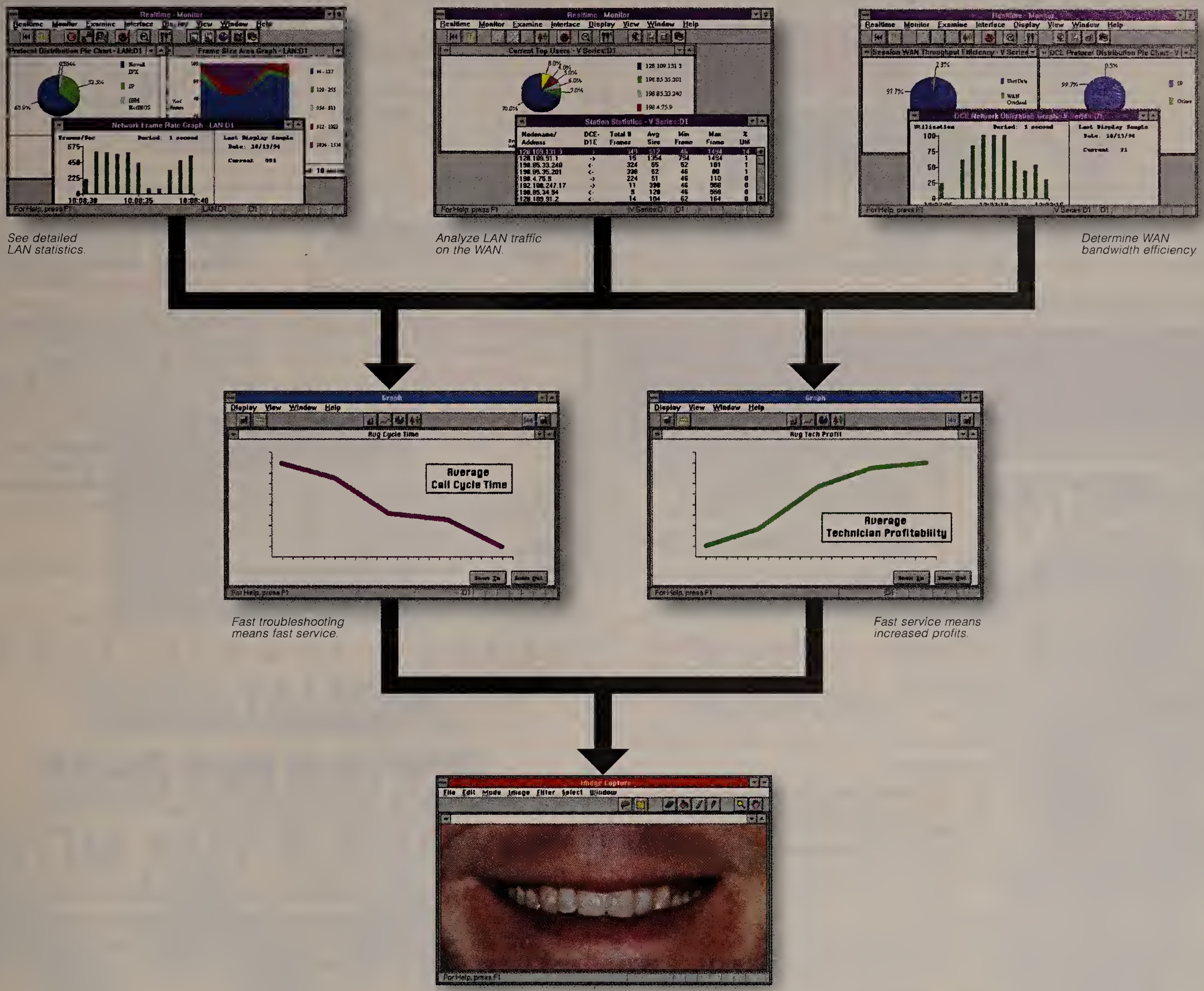
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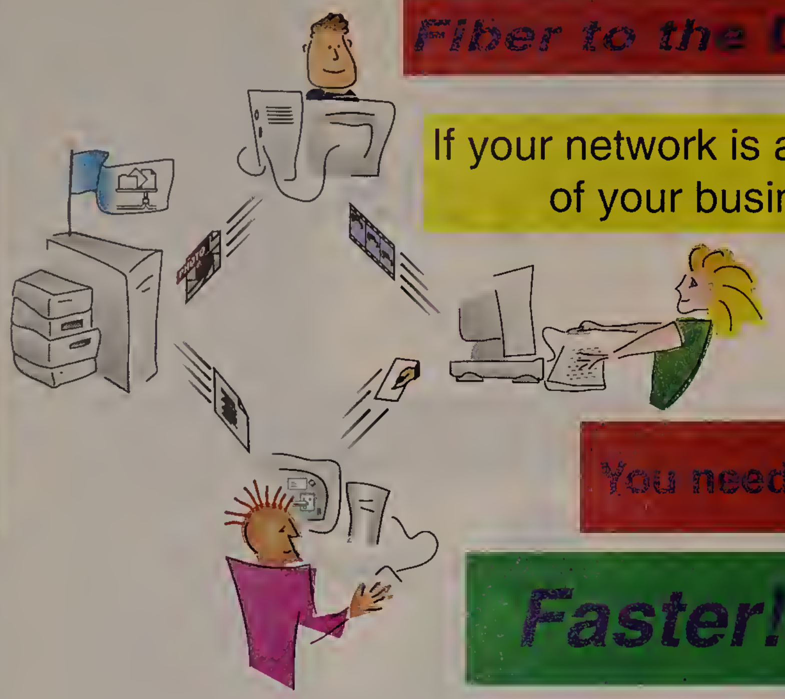

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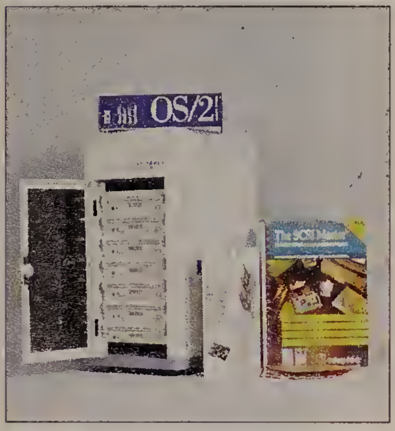

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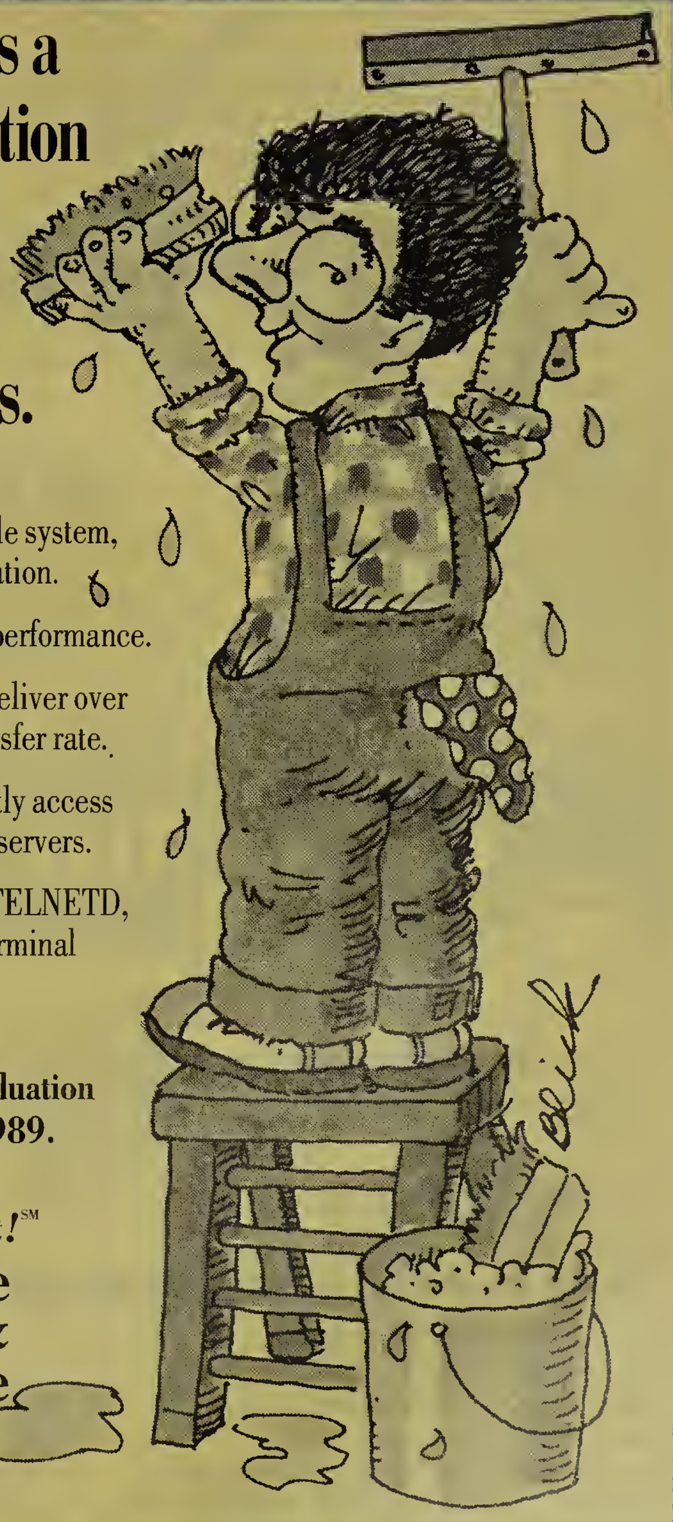

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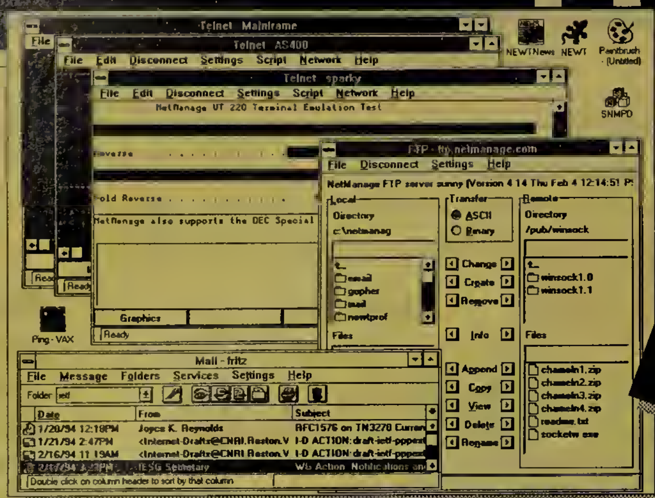

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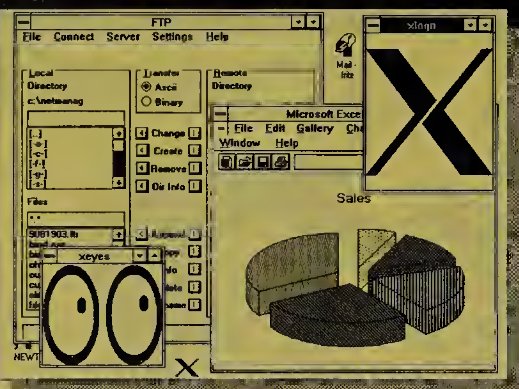

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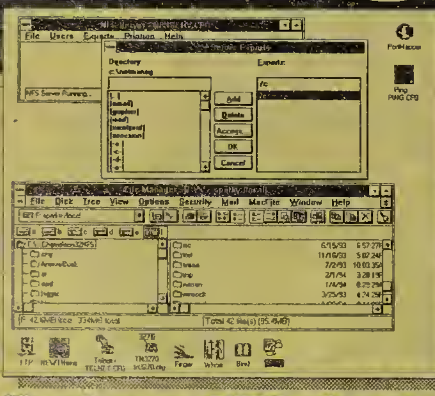

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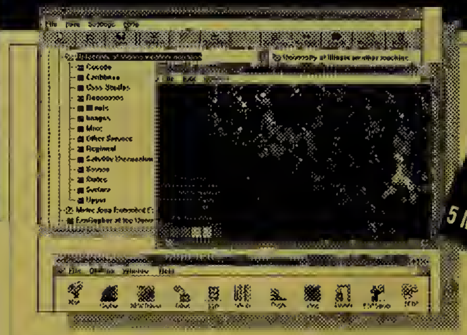

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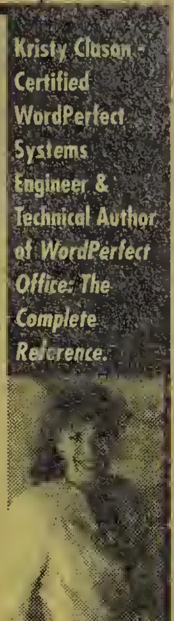

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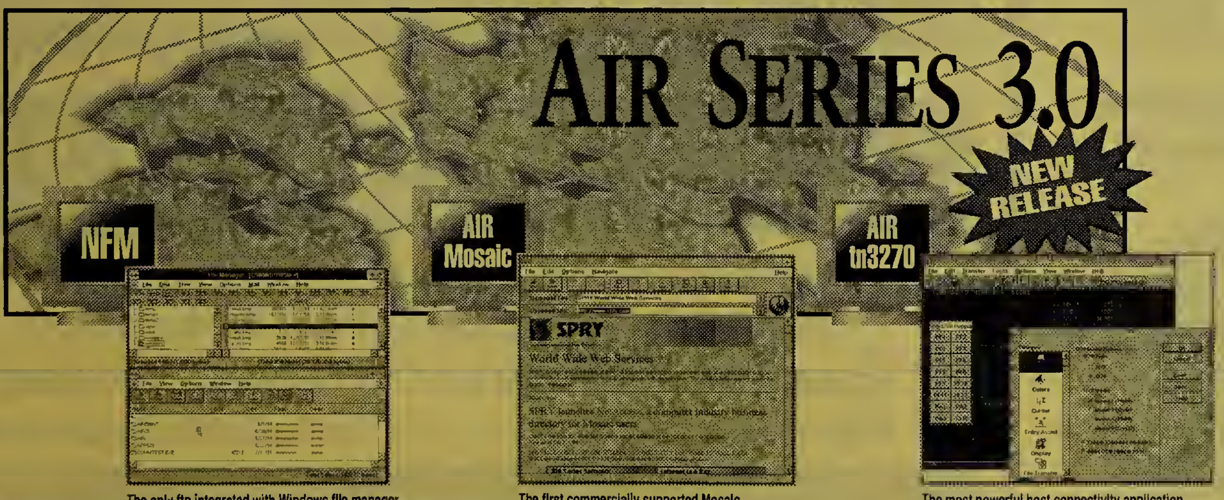

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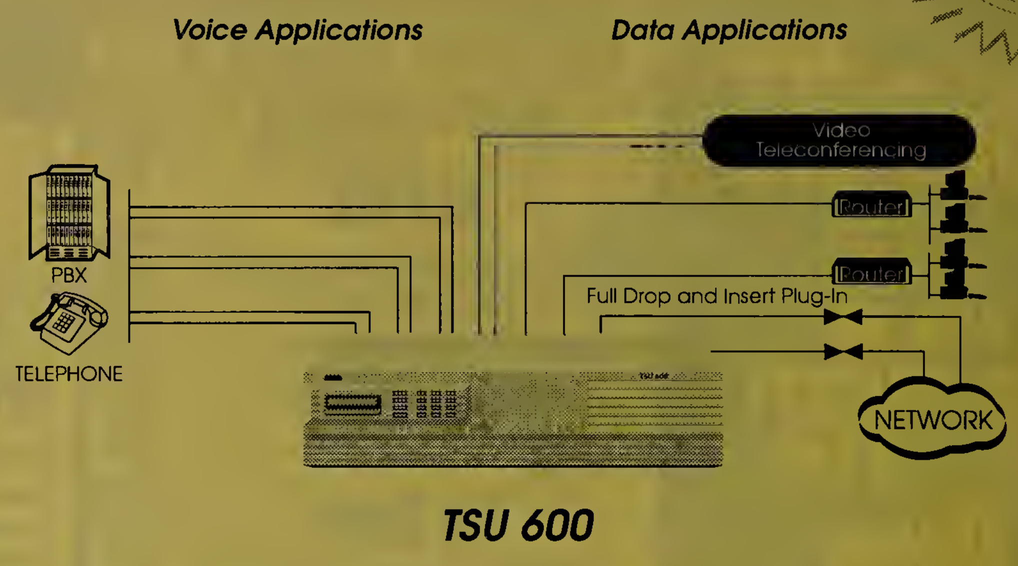

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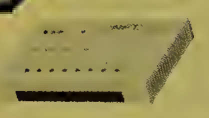

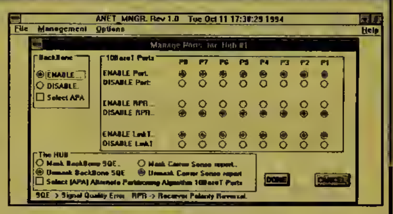

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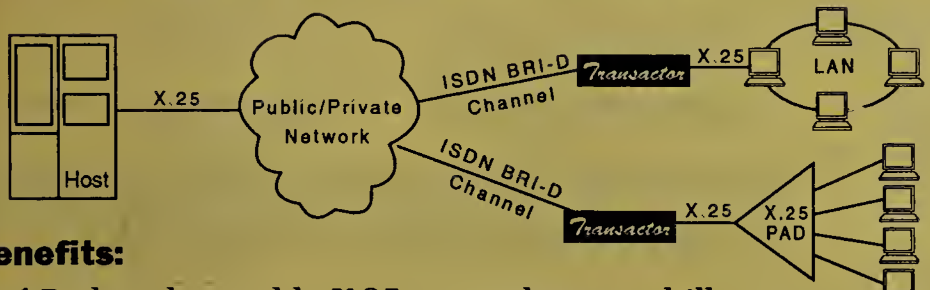

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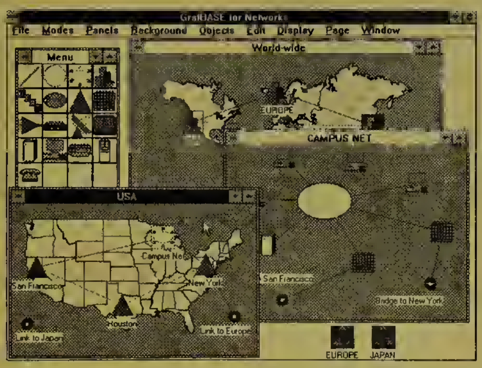

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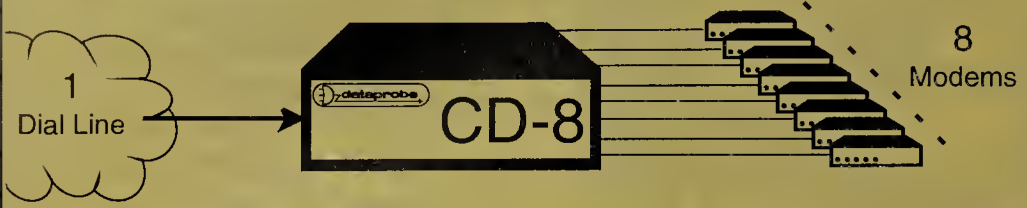

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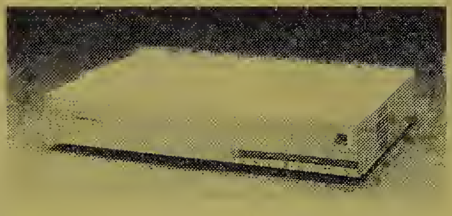

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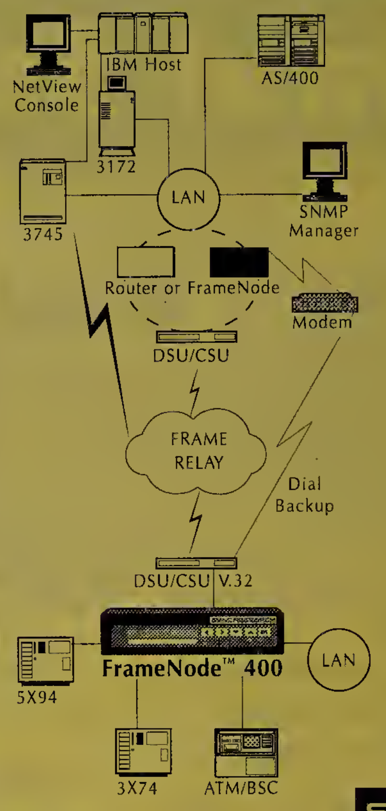

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- Dataprobe
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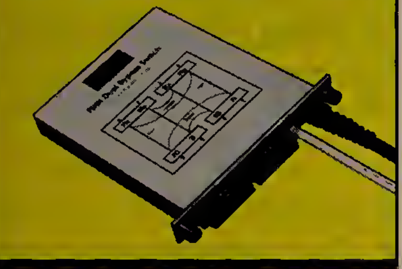

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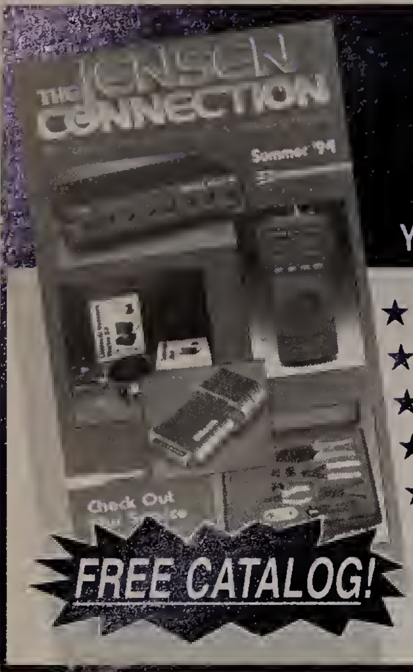

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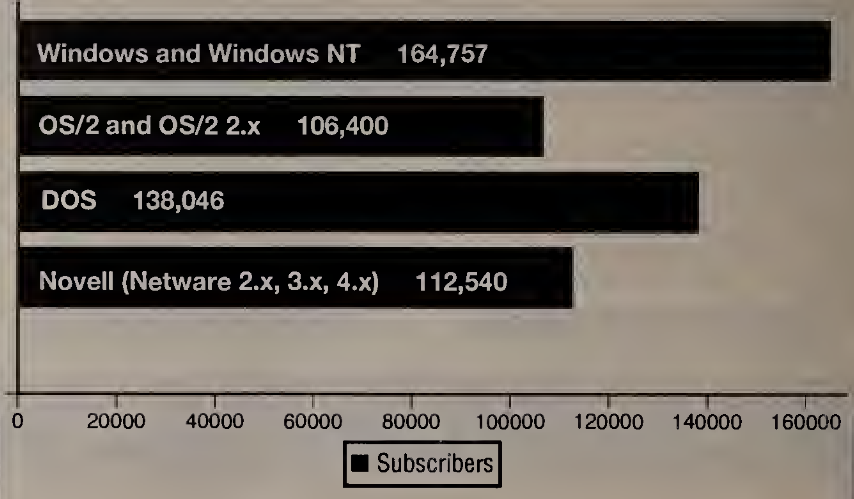

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Integration

Continued from page 1

agement product, said Jamie Lewis, an analyst with The Burton Group. NMS currently offers hooks that let users of IBM's host-based NetView receive alerts but little other information.

"There's a big difference between saying, 'When you send an SNMP alert to NMS, also send one to NetView,' and the kind of integration they're talking about now," Lewis said.

SUMMIT PREVIEW

That limited amount of information does not provide much to network managers, who need access to more detailed event and topology information as well as alerts, said John Dubiel, manager of planning and technology for utility company Boston Edison Co. But flooding an enterprise-level manager with picayune event details may be overkill, he said.

"We would like to have selected alerts and alarms sent back to a master manager," Dubiel said. "If that's what they're doing, it's great."

Novell should also develop software to let NMS work with Hewlett-Packard Co.'s OpenView management system, said Jack Karp, president of Affinity Research Corp., a consultancy in Greenwich, Conn.

NetView for AIX is based on OpenView but is not fully compatible with it.

Novell officials declined comment on the expected announcement. IBM officials were also mum, saying only that "IBM and Novell will announce the mutual interoperability customers have been requesting."

IBM's host-based network management system Multisystem Manager has some ties to NMS. But that level of integration does not address the needs of users relying on router-based internetworks, as does the integration between NMS and NetView for AIX, said David Passmore, president of Decisis, Inc., a consultancy in Herndon, Va.

HP's OpenView does have the ability to monitor NetWare networks and has some ability to reconfigure them, Lewis said. But HP does that through another product licensed from Peregrine Systems, Inc. that duplicates NMS, maintaining separate databases and network views.

The IBM-Novell project is simpler, uses the existing abilities of NMS and does not require users to maintain multiple NetWare network management applications, Lewis said.

The announcement also crystallizes Novell's net management strategy, Lewis said. Novell nets will be managed on the departmental or workgroup level through NMS, and will be monitored and managed on an enterprise level using standard SNMP-based management platforms such as NetView for AIX.

For its part, IBM is hoping to leverage Novell's dominance in the LAN arena for an edge over management competitors such as HP. "Any vendor that talks about doing multivendor management must be working with NetWare," Lewis said.

➡ Senior Editor Jim Duffy contributed to this report.

NSC

Continued from page 3

ing cell/frame translation and address mapping.

"This is the kind of product that Paul Severino [president and chief executive officer of Bay Networks, Inc.] is talking about bringing out in 18 months," said Mark Cree, NSC's marketing group manager. "It's a whole new class of product, and we're about two years ahead of the market with this."

NSC unveiled the switch at the Next-Generation Networks conference in Washington, D.C., where Severino and other industry leaders discussed their views of network migration needs.

NETWORKS-ON-DEMAND

The switch takes the concept of virtual LANs a step further with a feature called Networks-on-Demand. The feature is based on the fact that each LAN module has its own router on-board, enabling each to be configured differently to best support a given application.

The switch can monitor every traffic stream, determining that one is a file transfer and another is a videoconference, for example. Each stream is then routed through modules that best serve that traffic type.

So even though a user has only one physical LAN connection, each application runs over a different logical LAN, according to its traffic type.

"Most virtual LAN strategies simply connect desktops together into workgroups that help ease administration," said Nick Lippis, president of Strategic Networks Consulting, Inc. in Rockland, Mass. "NSC is getting at a broader interpretation, connecting hubs together in a way that will enable virtual WANs."

Networks-on-Demand is also the basis for a security feature called NetSentry, which can regulate access to each separate logical LAN. Lippis said NSC offers the most extensive security features of any router vendor, including encryption and user authentication.

Underlying NSC's distributed routing approach is an addressing scheme that maps Ethernet media access control addresses to ATM virtual circuits. Other vendors with virtual LAN architectures have always required users to administer their media access control (MAC) and virtual circuit addresses separately on each interface card, Cree said.

The ERS instead uses a MAC Terminator Plug attached to the ATM switching fabric. This approach maps virtual MAC addresses to each interface card, which simplifies administration and makes features like Networks-on-Demand possible, Cree said.

It also helps reduce the processing overhead at each port. Combined with a common address cache on each six-port Ethernet module, NSC's approach provides wire-speed throughput on each LAN port, Cree said. The ERS will also support higher density ATM ports than other vendors have, he said.

In addition, NSC will offer a five-slot version for smaller networks.

Entering beta trials in December, the ERS will ship commercially in the first quarter of next year. The five-slot model will cost $19,000, while the 16-slot version will cost $28,000. Interface modules will range from $14,000 to $20,000.

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Comments?

See "How to reach us" on the back page.

Reservations

Continued from page 1

Inn. That has increased revenue by between 3% and 5% for hotels that use the system, he added.

The company has been rolling out HIRO for two years, and it now sits on Novell, Inc. NetWare LANs at 1,250 of Holiday Inn's 1,400 domestic hotels. It will be installed at the remaining U.S. locations by April and deployed at 450 hotels in other countries around the world by early 1996, Lynch said.

It will likewise be installed at the 1,200 new franchises Holiday Inn expects to sell internationally by 1998.

Gaining control of the reservation system, the lifeblood of any hotel business, was a vital part of the company's plan to nearly double its number of franchises and to create separate brand names for hotels of varying quality and price, Lynch said.

But getting independent franchises to accept the new system and cede control over their reservations, which had been primarily in the hands of hotel managers, was fairly easy, Lynch said.

"It wasn't hard to convince them — because we're paying for everything, and it makes them more money," he said.

Before the Worldwide Hotel System (WWHS) rolled out, franchisees used whatever systems they preferred to handle reservations. The only common denominator was a terminal used to take reservations from the central Holidex, Lynch said.

Franchises had to hire full-time data entry clerks to transfer reservation data between Holidex and their own systems — frequently by printing it out and rekeying it.

That inefficient manual connection meant that the number of rooms actually available in a given hotel often varied widely from what the central records showed, according to Lynch.

The new system keeps an accurate count of rooms and accounts, handles credit card approvals more quickly, and saves franchisees the cost of data entry clerks.

THE SYSTEM SKINNY

The front end of WWHS is a Microsoft Windows-based hotel management application that runs on diskless workstations connected to a NetWare server. The server tracks reservations locally in a Novell Btrieve database, which is updated automatically from the data center.

The server is also connected to The Santa Cruz Operation, Inc.'s Unix box that acts as a gateway to the very small aperture terminal nets, converting SPX data to IP for transmission.

The newer version of WWHS, ready for rollout to international hotels, uses Novell's UnixWare in the gateway server, rather than SCO Unix.

LYNCH

UnixWare includes SPX and IP support in one package, making it easier to use than SCO Unix, Lynch said.

"We could have gone with a number of Unixes, but it makes sense to go with a single-solution provider, and Holiday Inn is a major NetWare customer internationally," Lynch said.

Novell's promise of the SuperNOS, which will bring together UnixWare and NetWare capabilities in one operating system sometime in 1996, was also a factor, he added.

When the two products converge, Lynch will be able to consolidate the functions of his NetWare and UnixWare servers on one box and redeploy the extra servers in different hotels.

"So, conceivably, with 450 international hotels, I'm buying enough hardware to take me to 900 hotels," Lynch said.

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PowerPC

Continued from page 1

machines can run only one operating system at a time, said Miles Barel, IBM's worldwide workplace brand manager. To change the operating system, users must reboot. IBM and several other vendors expect to announce PowerPC machines in the next few months.

With the next generation promised last week, IBM and Apple will design and sell compatible machines that can run multiple operating systems concurrently. Toshiba Corp., Canon Corp. and Hewlett-Packard Co. have expressed interest in making clones.

(From l.) Motorola's Staiano, IBM's Mii and Apple's Diery team up after the PowerPC Alliance.

However, like the 1991 PowerPC announcement, the common platform will be awhile in coming. The trio expects to release the specification in 1995 and ship the first machines in late 1996.

The real impact of PowerPCs may not come for several generations, when future versions of the PowerPC 601 chip family will run superservers and support multiprocessing, said Kevin Phillips, ISV business development manager at Motorola in Austin, Texas. "In the next year or two, you're going to see a tremendous proliferation of uniprocessor and multiprocessor 604 [CPU] server class machines from a variety of OEMs," he said.

Five years down the road are superserver-class processors such as the PowerPC 620 CPU, announced in October. It shows some of the potential power of PowerPC chips, in their capacity to handle mainframe-type computations and support massively parallel systems, Phillips said.

The PowerPC platforms being developed now under the specs that were begun in 1991 include servers that will support multiprocessing and ensure fast I/O to support high-speed net peripherals, he added. The common hardware platform unveiled last week will build on those characteristics but support common peripherals and components, including some out today.

But the partners can distinguish their compatible systems under the specs.

Tim Ohsann, an IBM systems spokesman, said the hardware reference platform specification is loose by design.

Apple is developing PowerPC servers that emphasize ease of use and extensibility, said Steve Seminario, Apple's product-line manager for PowerPC servers in Cupertino, Calif. "We plan to bring that focus to future Apple servers and the hardware reference platform," he said.

Apple expects to ship its latest PowerMac next month. The PowerMac 8100/110, a 110-MHz machine with 16M bytes of random-access memory, is intended to compete with Intel Corp.'s Pentium and cost about $6,000.

Apple and Novell, Inc. plan to ship next year a version of NetWare 4.1 on Apple PowerPC-based servers. That implementation will inspire applications and NetWare Loadable Modules for future PowerPC systems, Seminario said.

With the arrival of the first PowerPC systems that can natively support multiple operating systems, network managers with heterogeneous networks can pare down the hardware on their desks.

"It's very critical for a network manager in a heterogeneous environment to be able to run multiple environments from a single unit," said Amy Wohl, industry analyst and editor of "The TrendsLetter" in Narberth, Pa. But aside from that convenience, she wonders if a multiple-operating system platform will attract application developers.

Also, the partnership stops short of the rumored merging of operating systems, noted Rob Enderle, analyst with Dataquest, Inc. in San Jose, Calif.

"It was notable what they didn't do," he explained. ☒

PowerPC does Vegas

The trio that calls itself the PowerPC Alliance will showcase at Comdex/Fall this week a pavilion full of new PowerPC-based systems and applications.

PowerPC is a powerful processor for desktop and server systems being developed by Apple Computer, Inc., IBM and Motorola, Inc. More than 25 companies are building PowerPC-based systems and many others are working on applications.

Apple, which is already shipping a PowerMac based on the PowerPC Reduced Instruction Set Computing chip, will be among the hardware vendors showing off products.

COMDEX/Fall'94

Apple is expected to introduce a microprocessor board that plugs into a PowerMac and lets users run Windows.

Other hardware vendors expected to participate in the pavilion include Bull HN Information Systems Inc., Canon Corp., Hitachi, Ltd., The 3DO Co., the Taiwan New PC Consortium and Toshiba Corp.

On the software side, IBM is expected to show a version of OS/2 for the PowerPC due for release by the middle of next year, according to an IBM spokesman. Applications designed to run on the PowerPC version of OS/2 -- available to software developers in an alpha version — are already up and running, the IBM spokesman said.

Also participating at the pavilion will be Microsoft Corp., which showed Windows NT running on a PowerPC system in May at the Windows World show, according to Carl Stork, Microsoft's director of Windows hardware programs.

Other software vendors showing PowerPC products will include Pinnacle Technology, Sundial Systems Corp. and Athena Design, Inc.

BY MARGARET DORNBUSCH AND PEGGY WATT

NETWORK WORLD

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Sybase

Continued from page 1

Another big boost to the product will come in the third quarter of 1995 in a Replication Server release to be dubbed either 10.2 or 11 that will let administrators copy entire databases, not just tables. This release will allow users to replicate stored procedures, text and images, as well, Palanca said.

The second release will also reduce the amount of time between when a transaction takes place and when it is copied to other databases. This will significantly improve the quality of warm backups, replicated databases that come on-line in the event that a server goes down.

"Previously, our [Replication Server] connection to a SQL Server was single-threaded. In the third quarter of 1995 release, we'll use multithreading," Palanca said.

Replicated databases will then more likely represent an accurate double of their source databases at any given time, she said.

Also in the third quarter of 1995, Sybase will roll out Enterprise Replication Server Manager, a graphical client/server-based tool that will let administrators manage replication between distributed databases from a central point.

The tool will be linked to Enterprise SQL Server Manager, software for centrally managing distributed databases that is based on Tivoli Systems, Inc.'s object-oriented technology (*NW*, Aug. 15, page 1).

Sybase will continue to bundle an existing product called Replication Server Manager, a character-based tool for setting up individual replication sessions locally with Replication Server.

"The big weakness with Sybase replication is it's very complicated to set up" replication sessions across an enterprise, said Howie Michalski, lead database engineer at CompuServe, Inc. in Columbus, Ohio. Administrators now must navigate through a series of character-based screens to set up Replication Server.

Sources said Sybase has been driven to make Replication Server easier to use not just by customers, but also by Microsoft, which is rolling out its SQL95 database in the first quarter of next year. SQL95 will include a set of graphical tools that lets users point and click their way through replication setup.

Users were enthusiastic about Sybase's planned administration tools but said more performance monitoring tools may still be in order.

"The biggest problem we face is a user saying, 'I pushed the button and nothing happened.' We need a way to track the transaction and make sure it's gotten to where it's supposed to," said David Truch, partner relations manager at BP Exploration Alaska, Inc. in Anchorage, Alaska. Truch said such tools would also help in performance tuning.

Palanca declined to say how much the new versions will cost. ☒

Battle

Continued from page 3

LAN-to-mainframe gateway."

As part of the planned enhancements to the 3172, IBM will add a feature to the machine's operating system, the Interconnect Controller Program (ICP), that lets the 3172 support an unlimited number of Token-Ring users. (In addition to ICP, the 3172 can run the OS/2 operating system.)

"Our larger 3172 accounts have found that 1,024 number to be constraining. We're going to fix that so the only constraint is the memory on board the 3172," said Bob Kennedy, IBM's establishment and interconnect controller product manager.

Also added to the ICP program will be support for standard TCP/IP routing, which will allow the 3172 to route TCP/IP traffic to any number of hosts. Today, TCP/IP traffic coming into a 3172 can only be sent to one host; no routing takes place.

"These are the two biggest features Cisco has been saying the 3172 lacks," said Frank Dzubeck, president of Communication Network Architects, Inc., a consultancy based in Washington, D.C.

IBM will also unveil a new ICP feature that lets users with multiple 3172s balance traffic among the boxes. The feature will let a 3172 shift traffic to another device when a user-defined traffic threshold is exceeded. It will send traffic to another 3172 if the primary box fails or a link goes down. "If SNA sessions are present, they will be lost if the initial 3172 goes away, but they will be instructed to go through another path and reestablish the session quickly," Kennedy said.

Also, IBM will roll out its first performance monitor for the 3172 that will let users watch over the 3172 CPU, LAN adapters and mainframe channel adapters.

Finally, IBM will add tn3270 support under OS/2, which will let the 3172 act as a terminal server to attached workstations. IBM's tn3270 is software that lets devices on a TCP/IP net emulate 3270 terminals. ☒

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Back to Reality

Cisco and Bay Networks try to guess the future of LAN internetworking.

BY DAVID J. BUERGER

A wise newspaper editor once said that everything you read is absolutely true, except for that rare story of which you happen to have firsthand knowledge.

Among those stories are the new dueling future product architectures of Cisco Systems, Inc. (CiscoFusion) and Bay Networks, Inc. (BaySIS), formerly SynOptics Communications Inc. and Wellfleet Communications Inc.

These billion-dollar giants are hard to ignore. Just as Democrats and Republicans dominate the political scene, these companies garner a huge share of internetworking votes.

Last week, Republicans managed to convince voters that they will make a difference. Most voters secretly don't expect much change because politicians are interchangeable — each tells the same sophistries, then does the opposite once the person gets elected.

I do not equate Cisco or Bay with evasive pols, but anyone with a big investment in net gear would be wise to question these and other vendors' plans for future internetworking products.

On the one hand, revenues of technology-driven companies like Cisco and Bay are threatened by commoditization. Each needs a new story to surmount next year's sale of discount routers and hubs at Wal-Mart and Fry's. Oops — Fry's already sells them in Aisle 9, next to the panty hose.

Cisco and Bay are also nervous about the impact of network switching on their core router and hub businesses. If you believe the trade press (see above), network managers will flock to replace every router and hub with switches during 1995.

The truth probably lies beyond that time frame. Meanwhile, how are we going to get from here to there?

Unfortunately, both companies' strategy literature explains this as clearly as the U.S. tax code. Cisco's definition finally appeared on page six of a 12-page brochure as such: "The CiscoFusion architecture 'fuses' the scalability, stability and security advantages of today's routing technologies with the performance benefits of ATM and LAN switching and the management benefits of virtual LANs." Huh?

Bay sort of got to the point quicker — on page four of an 18-page white paper — stating it "will use the BaySIS architecture to provide an integrated set of products for evolving today's internetworks to the future of switched internetworking, while delivering the transport, operations and policy services required to build and maintain an enterprisewide net." That makes sense — not.

I'm suspicious when vendor strategies are flush with obscure, polysyllabic words. At least Bay omitted acronyms. What they mean in English is, "Don't worry, be happy, and keep buying our routers, hubs and switches."

Both vendors believe that most LAN connectivity eventually will be through switches. Their visions diverge on how virtually switched LANs will exchange data among one another.

Most virtual LANs are like virtual reality — you can link them with your imagination. Once these nightmares turn to daymares, you'll need to deal with two critical routing mechanisms: cell forwarding and route determination. The former is the digital cross-connect logic in an ATM switch; the latter sets up the virtual channels through which cells pass.

Bay wants to control virtual LAN-to-LAN traffic with a backbone router. Cisco jeers back, saying routers will become a roadblock to multigigabit switched traffic and that the routing functions should be split between a route processor and a switch processor. Eventually, Cisco wants to put a router everywhere you now have a repeater.

Bay deprecates Cisco's approach as "revolutionary" and claims it will result in extra equipment costs and management overhead. I'm not surprised, though, because Wellfleet's traditional strength has been backbone routing. "Switch where you can, but route where you must," according to Bay.

Cisco says this is a meaningless phrase. Cisco notes that it used to say, "Route where you can, but bridge where you must." Times have changed, and so must routing mechanisms.

Moderation wins

But as Bill and Hillary Clinton learned with health care, reforming a complex system isn't so simple. More to the point: Many people don't need the reform.

Most users are unlikely to need or want virtual LANs soon. Aside from the obvious specialized cases that require video or a huge volume of data movement, the majority of users will want to evolve their nets and retain as much infrastructure as possible.

Vendors like Bay or 3Com Corp., with its 17-month-old High Performance Scalable Networking strategy — from which Cisco and Bay seem to borrow liberally — are right to encourage change for an application's sake, not technology's sake. Eventually, Cisco's plan will make sense — but not for everyone.

Ironically, the pitches in these strategy stories have little merit as blueprints. Their value is proving that vendors are thinking about the future and showing evolutionary options.

The one thing we can be assured of is that whatever happens, it won't be how vendors tell the story today.

➻ Buerger is an industry consultant and contributing editor to *Network World*. He can be reached at dbuerger@pipeline.com.

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CyberSpeak

Voices from the reader network

Novell claims that UnixWare is an ideal application server for NetWare environments. Does UnixWare stand a chance vs. Unix and Windows NT?

◆ "The object of [Windows] NT is similar to the object of Unix. But who would you rather buy a car from, someone who's building their first car or someone who's been doing it for 20 years?"

Don Lynch, corporate director, Worldwide Hotel Systems Development for Holiday Inn, Atlanta

◆ "Hell, no. Many Windows NT Server 3.5 beta testers have found that it is easier to go from Novell 3.X to Windows NT than from Novell 3.X to Novell 4.X. This does not bode well for NetWare environments, making UnixWare the ideal server environment for an endangered species."

John Pescatore, IDC Government, Falls Church, Va.

◆ "I would like to think it has a chance, but I don't see much of it out there. Novell just doesn't sell it very well. Unix platforms are normally sold by people who build boxes, like Sun [Microsystems, Inc. and Hewlett-Packard Co].

"Novell is competing against those vendors' operating systems, and UnixWare is not available on those platforms. We are buying Unix platforms as alternatives to hosts, not alternatives to servers."

John Dubiel, manager of planning and technology, Boston Edison Co., Boston

NextWeek CyberSpeak Out!

IBM, Apple and Motorola make for a powerful team. What role do you foresee clients and servers — based on their PowerPC processors — playing in your net?

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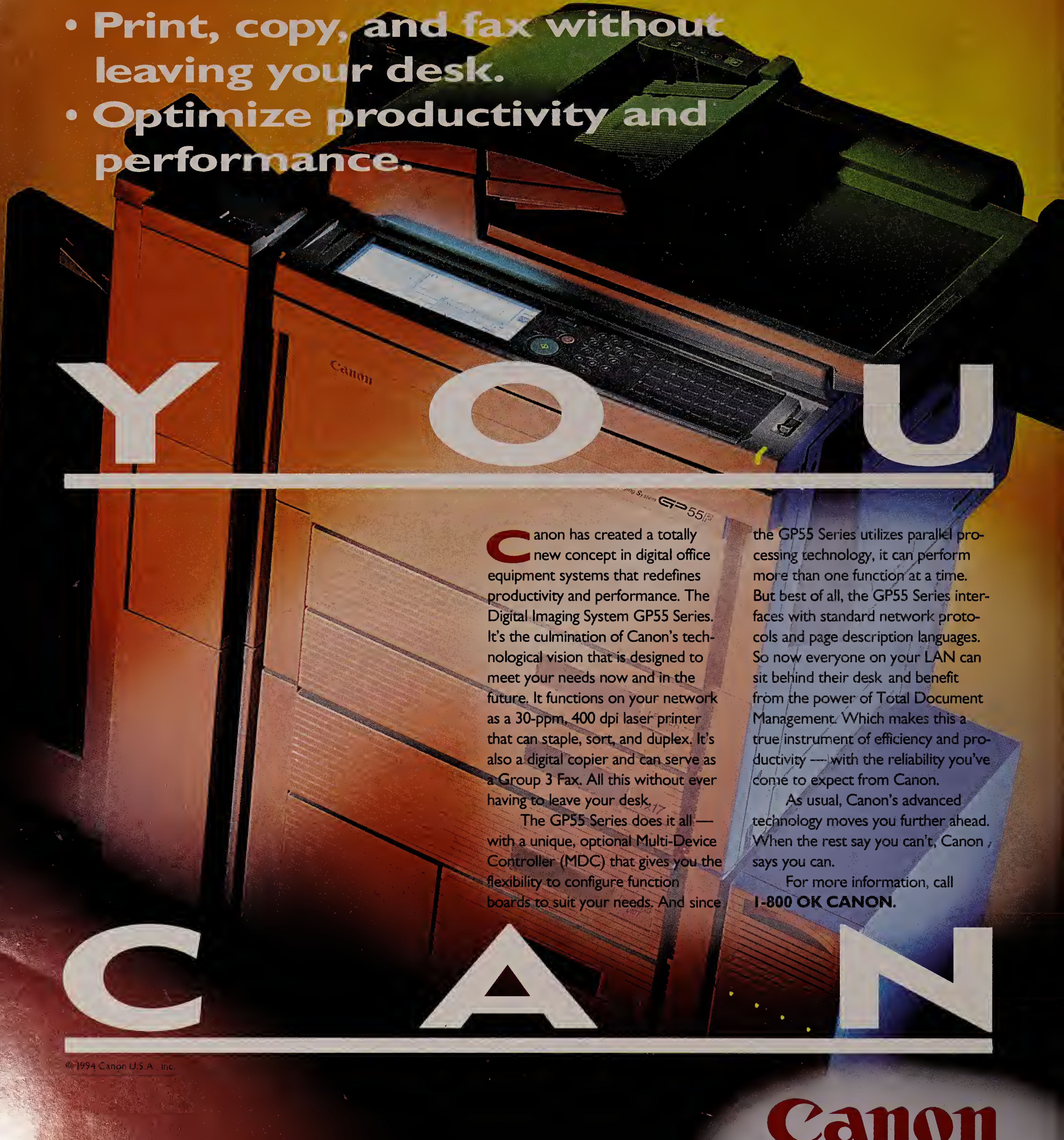

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1 Industry: (check one only)

01. ☐ Manufacturers (other)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Healthcare Services
05. ☐ Hospitality/Entertainment/Recreation
06. ☐ Media/TV/Cable/Radio/Print
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12. ☐ Government Federal/State/Local
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14. ☐ Aerospace
15. ☐ Consultants (Independent)
16. ☐ Carriers/Interconnects
17. ☐ Manufacturers (Computer/Communications)
18. ☐ Systems/Network Integrators (VAR/VAD/ VAN/Systems/Software Houses)
19. ☐ Distributors Communications/Computers
20. ☐ Other ______________________

2 What is your Job Function? (check one only)

NETWORK IS Management:
1. ☐ Networking Management
2. ☐ LAN Management
3. ☐ Datacom/Telecom Management
4. ☐ IS,IT,MIS,Systems Management
5. ☐ Engineering Management
6. ☐ Corporate Management (CIO,CEO,PRES,VP, DIR,MGR,Financial Management)
7. ☐ Consultant (Independent)
8. ☐ Other ______________________

3 What is the total number of sites for which you have purchase influence? (check one only)

1. ☐ 100+
2. ☐ 50-99
3. ☐ 20-49
4. ☐ 10-19
5. ☐ 2-9
6. ☐ 1
7. ☐ None

4 What is your scope and involvement in purchasing decisions for network products & services for your enterprise?

A. SCOPE
(check one only)
1. ☐ Corporatewide
2. ☐ Multienterprise
3. ☐ Departmental
4. ☐ None

B. INVOLVEMENT
(check all that apply)
1. ☐ Recommend/ Specify
2. ☐ Approve
3. ☐ Evaluate
4. ☐ Determine the need
5. ☐ None

5 Check ALL that apply in columns A and B:

A: I am involved in the purchase of the following products/services. B: I plan to purchase the following products/services.

A B

☐ 100 ☐ **LOCAL AREA NETWORKS**
☐ 01. ☐ Local Area Networks
☐ 02. ☐ Network Operating Systems Software (NOS)
☐ 03. ☐ LAN Storage Devices (optical, tape, disk, etc.)
☐ 04. ☐ LAN Backup Systems (optical, tape, disk, etc.)
☐ 05. ☐ Network Test Equipment/Diagnostic/ Management Software
☐ 06. ☐ Hubs/Intelligent Hubs
☐ 07. ☐ Cables, Connectors, Baluns
☐ 08. ☐ UPS
☐ 09. ☐ Network Adapter Boards/Network Interface Cards
☐ 10. ☐ Peer-to-Peer LANs
☐ 11. ☐ Wireless Networks
☐ 12. ☐ SNMP Network Management
☐ 13. ☐ ATM Switches
☐ 14. ☐ Remote LAN Access
☐ 15. ☐ Ethernet Switches
☐ 16. ☐ LAN Servers
☐ 17. ☐ Superservers
☐ 18. ☐ Remote Access/Communications Servers

☐ 101 ☐ **REMOTE/WIRELESS COMPUTING**
☐ 19. ☐ Laptops
☐ 20. ☐ Notebooks
☐ 21. ☐ PDAs
☐ 22. ☐ PCMCIA

A B **REMOTE/WIRELESS COMPUTING (cont'd)**
☐ 23. ☐ Mobile Data Services
☐ 24. ☐ Wireless Data Services
☐ 25. ☐ Wireless Data Equipment

☐ 102 ☐ **INTERNETWORKING**
☐ 26. ☐ Bridges
☐ 27. ☐ Routers
☐ 28. ☐ Gateways
☐ 29. ☐ Bridge/Routers

☐ 103 ☐ **COMPUTERS/PERIPHERALS**
☐ 30. ☐ Micros/PCs
☐ 31. ☐ Minis
☐ 32. ☐ Mainframes
☐ 33. ☐ Workstations
☐ 34. ☐ Front-End Processors
☐ 35. ☐ Terminals
☐ 36. ☐ Printers
☐ 37. ☐ Cluster Controllers
☐ 38. ☐ Fax Machines
☐ 39. ☐ Monitors

☐ 104 ☐ **SOFTWARE/APPLICATIONS**
☐ 40. ☐ Network Management
☐ 41. ☐ Systems Management
☐ 42. ☐ Micro to Mainframe
☐ 43. ☐ Security
☐ 44. ☐ Communication/Terminal Emulation
☐ 45. ☐ Word Processing
☐ 46. ☐ Operating Systems

A B **SOFTWARE/APPLICATIONS (cont'd)**
☐ 47. ☐ Client Server Applications Development
☐ 48. ☐ Applications Development
☐ 49. ☐ Data Base Management/RDBMS
☐ 50. ☐ Spreadsheet
☐ 51. ☐ Groupware
☐ 52. ☐ EDI
☐ 53. ☐ E-Mail
☐ 54. ☐ Windows/Graphical User Interface
☐ 55. ☐ 4GL Development/Case
☐ 56. ☐ Multimedia
☐ 57. ☐ Graphics/DTP
☐ 58. ☐ Remote Access
☐ 59. ☐ Imaging
☐ 60. ☐ Suites
☐ 61. ☐ Middleware
☐ 62. ☐ Document Management

☐ 105 ☐ **WIDE AREA NETWORKS EQUIPMENT & SERVICES**
☐ 63. ☐ Modems (9.6K bps and over)
☐ 64. ☐ Modems (under 9.6K bps)
☐ 65. ☐ T-1/T-3 Multiplexers
☐ 66. ☐ T-1/T-3 Services
☐ 67. ☐ Inverse Multiplexers
☐ 68. ☐ Fractional T-1
☐ 69. ☐ SMDS
☐ 70. ☐ ATM (Asynchronous Transfer Mode)
☐ 71. ☐ Matrix Switches
☐ 72. ☐ Packet Switches

A B **WIDE AREA NETWORKS EQUIPMENT & SERVICES (cont'd)**
☐ 73. ☐ Protocol Converters
☐ 74. ☐ Diagnostic/Test Equipment
☐ 75. ☐ DSU/CSU
☐ 76. ☐ Microwave
☐ 77. ☐ Fax Boards/Modems
☐ 78. ☐ VSAT
☐ 79. ☐ Fiber Optic
☐ 80. ☐ Satellite
☐ 81. ☐ ISDN
☐ 82. ☐ PBXs (over 1000 lines)
☐ 83. ☐ PBXs (under 1000 lines)
☐ 84. ☐ Automatic Call Distributors
☐ 85. ☐ Voice Messaging Systems
☐ 86. ☐ Videoconferencing/Teleconferencing
☐ 87. ☐ Voice Response/Processing
☐ 88. ☐ Dedicated Leased Line
☐ 89. ☐ Switched Data
☐ 90. ☐ E-Mail/Online Services
☐ 91. ☐ Image Processing
☐ 92. ☐ 800/900 Services
☐ 93. ☐ WATS/MTS
☐ 94. ☐ International
☐ 95. ☐ Virtual Networks
☐ 96. ☐ Frame Relay
☐ 97. ☐ Value Added Services
☐ 98. ☐ CIT (Computer-Integrated Telephony)

☐ 99. ☐ None of the above (1-98)

6 What is the total number of LANS, Workstations/Nodes: At this Location/ In your Organization?

At This Location:

	LANs		Workstations/Nodes
1.	☐	5000+	☐
2.	☐	1,000 - 4,999	☐
3.	☐	100 - 999	☐
4.	☐	50 - 99	☐
5.	☐	10 - 49	☐
6.	☐	9 or less	☐
7.	☐	None of the above	☐

Entire Organization:

	LANs		Workstations/Nodes
1.	☐	5000+	☐
2.	☐	1,000 - 4,999	☐
3.	☐	100 - 999	☐
4.	☐	50 - 99	☐
5.	☐	10 - 49	☐
6.	☐	9 or less	☐
7.	☐	None of the above	☐

7 Check ALL that apply in columns A and B:

A: The following network platforms are currently installed.
B: The following network platforms are currently planned.

A B

☐ 55 ☐ **NETWORK ARCHITECTURES**
☐ 01. ☐ SNA
☐ 02. ☐ DECNET
☐ 03. ☐ MAP/TOP
☐ 04. ☐ TCP/IP
☐ 05. ☐ DCA (Unisys)
☐ 06. ☐ X.25
☐ 07. ☐ Novell IPX/SPX
☐ 08. ☐ APPC/APPN/LU6.2
☐ 09. ☐ NETBIOS
☐ 10. ☐ OSI
☐ 11. ☐ APPLETALK
☐ 12. ☐ NSF
☐ 13. ☐ XNS
☐ 14. ☐ OTHER______________

☐ 56 ☐ **NETWORK OPERATING SYSTEM**
☐ 15. ☐ LOCALTALK (APPLETALK)
☐ 16 ☐ BANYAN (VINES)
☐ 17. ☐ DCA (IRMALAN)
☐ 18. ☐ DCA (10-NET)
☐ 19. ☐ IBM (LAN SERVER)
☐ 20. ☐ IBM (PC LAN PROGRAM)
☐ 21. ☐ MICROSOFT (LAN MANAGER)
☐ 22. ☐ NOVELL (NETWARE, 2X, 3X, 4X)
☐ 23. ☐ PROTEON (PRONET)
☐ 24. ☐ 3COM (3+, 3+OPEN)
☐ 25. ☐ ARTISOFT (LANTASTIC)
☐ 26. ☐ HAYES (LANSTEP)
☐ 27. ☐ DEC (PATHWORKS)
☐ 28. ☐ WINDOWS NT/ADVANCED SERVER
☐ 29. ☐ OTHER______________

☐ 57 ☐ **LAN ENVIRONMENT**
☐ 30. ☐ 4M TOKEN RING
☐ 31. ☐ 16M TOKEN RING
☐ 32. ☐ ARCNET
☐ 33. ☐ ETHERNET
☐ 34. ☐ 100 M ETHERNET
☐ 35. ☐ STARLAN
☐ 36. ☐ FDDI
☐ 37. ☐ LOCAL TALK
☐ 38. ☐ 10BASE-T
☐ 39. ☐ ATM
☐ 40. ☐ OTHER______________

☐ 58 ☐ **COMPUTER OPERATING SYSTEM**
☐ 41. ☐ DOS
☐ 42. ☐ UNIX/XENIX/AIX
☐ 43. ☐ OS/2
☐ 44. ☐ OS/2.X
☐ 45. ☐ IBM MVS
☐ 46. ☐ IBM VM
☐ 47. ☐ DIGITAL VMS
☐ 48. ☐ MACINTOSH
☐ 49. ☐ WINDOWS
☐ 50. ☐ WINDOWS NT
☐ 51. ☐ X WINDOWS
☐ 52. ☐ SOLARIS
☐ 53. ☐ OTHER______________

☐ 54. ☐ None of the above (1-53)

8 For which areas outside of the U.S. do you have purchase influence? (check all that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ None

9 Which of the following hardware platforms are installed/planned in your company? (check all that apply)

	Mainframes		Minis	
	Installed	Planned	Installed	Planned
01. IBM	☐	☐	☐	☐
02. DIGITAL	☐	☐	☐	☐
03. AMDAHL	☐	☐	☐	☐
04. AT&T	☐	☐	☐	☐
05. BULL HNIS	☐	☐	☐	☐
06. DATA GENERAL	☐	☐	☐	☐
07. HP	☐	☐	☐	☐
08. TANDEM	☐	☐	☐	☐
09. UNISYS	☐	☐	☐	☐
10. OTHER________	☐	☐	☐	☐

Which of the following do you have installed/planned: (USE NUMBERS ONLY)

	At This Location		Entire Organization	
	Servers	Clients/ Nodes	Servers	Clients/ Nodes
11. POWER MACINTOSH				
12. MACINTOSH OTHER				
13. POWER PC BASED				
14. PENTIUM BASED				
15. 80486 BASED				
16. 80386 BASED				
17. 80286 BASED				
18. 80806/80808 BASED				
19. ALPHA BASED				
20. RISC/UNIX BASED WORKSTATIONS				
21. OTHER				

10 What is the estimated value of networking equipment and services that you help specify, recommend or approve annually? (check one only)

01. ☐ $100 million and over
02. ☐ $50 - $99.9 million
03. ☐ $25 - $49.9 million
04. ☐ $20 - $24.9 million
05. ☐ $10 - $19.9 million
06. ☐ $5 - $9.9 million
07. ☐ $1 - $4.9 million
08. ☐ $500,000 - $999,999
09. ☐ $499,999 or less
10. ☐ None of the above

11 Estimated gross annual revenues of your entire company/institution: (check one only)

1. ☐ Over $10 billion
2. ☐ $1 to $9.9 billion
3. ☐ $500 to $999.9 million
4. ☐ $100 to $499.9 million
5. ☐ $50 to $99.9 million
6. ☐ $10 to $49.9 million
7. ☐ $5 to $9.9 million
8. ☐ $4.9 million or less
9. ☐ None of the above

12 Estimated number of employees: At This Location/In Entire Organization

	At This Location:		Entire Organization:
1.	☐ Over 10,000	1.	☐ Over 10,000
2.	☐ 5,000 - 9,999	2.	☐ 5,000 - 9,999
3.	☐ 2,500 - 4,999	3.	☐ 2,500 - 4,999
4.	☐ 1,000 - 2,499	4.	☐ 1,000 - 2,499
5.	☐ 500 - 999	5.	☐ 500 - 999
6.	☐ 499 or less	6.	☐ 499 or less

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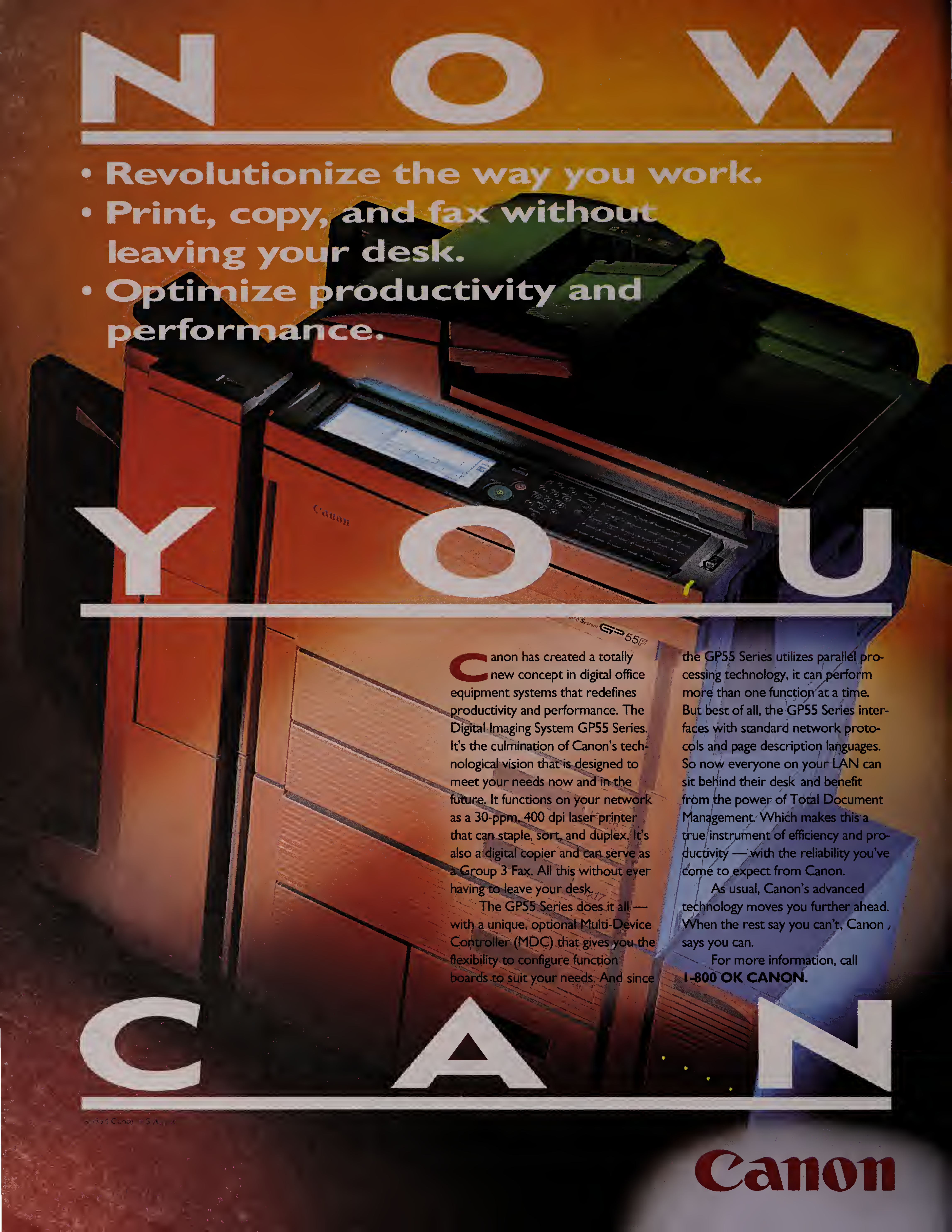

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1 Industry: (check one only)

- 01. ☐ Manufacturers (other)
- 02. ☐ Finance/Banking
- 03. ☐ Insurance/Real Estate/Legal
- 04. ☐ Healthcare Services
- 05. ☐ Hospitality/Entertainment/Recreation
- 06. ☐ Media/TV/Cable/Radio/Print
- 07. ☐ Retail/Wholesale Trade/Business Services
- 08. ☐ Transportation
- 09. ☐ Utilities
- 10. ☐ Education
- 11. ☐ Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry)
- 12. ☐ Government Federal/State/Local
- 13. ☐ Military
- 14. ☐ Aerospace
- 15. ☐ Consultants (Independent)
- 16. ☐ Carriers/Interconnects
- 17. ☐ Manufacturers (Computer/Communications)
- 18. ☐ Systems/Network Integrators (VAR/VAD/VAN/Systems/Software Houses)
- 19. ☐ Distributors Communications/Computers
- 20. ☐ Other________

2 What is your Job Function? (check one only)

NETWORK IS Management:

- 1. ☐ Networking Management
- 2. ☐ LAN Management
- 3. ☐ Datacom/Telecom Management
- 4. ☐ IS,IT,MIS,Systems Management
- 5. ☐ Engineering Management
- 6. ☐ Corporate Management (CIO,CEO,PRES,VP, DIR,MGR,Financial Management)
- 7. ☐ Consultant (Independent)
- 8. ☐ Other________

3 What is the total number of sites for which you have purchase influence? (check one only)

- 1. ☐ 100+
- 2. ☐ 50 - 99
- 3. ☐ 20 - 49
- 4. ☐ 10 - 19
- 5. ☐ 2 - 9
- 6. ☐ 1
- 7. ☐ None

4 What is your scope and involvement in purchasing decisions for network products & services for your enterprise?

A. SCOPE
(check one only)

- 1. ☐ Corporatewide
- 2. ☐ Multienterprise
- 3. ☐ Departmental
- 4. ☐ None

B. INVOLVEMENT
(check all that apply)

- 1. ☐ Recommend/Specify
- 2. ☐ Approve
- 3. ☐ Evaluate
- 4. ☐ Determine the need
- 5. ☐ None

5 Check ALL that apply in columns A and B:

A: I am involved in the purchase of the following products/services.
B: I plan to purchase the following products/services.

A ☐ 100 B ☐ LOCAL AREA NETWORKS

- ☐ 01. ☐ Local Area Networks
- ☐ 02. ☐ Network Operating Systems Software (NOS)
- ☐ 03. ☐ LAN Storage Devices (optical, tape, disk, etc.)
- ☐ 04. ☐ LAN Backup Systems (optical, tape, disk, etc.)
- ☐ 05. ☐ Network Test Equipment/Diagnostic/Management Software
- ☐ 06. ☐ Hubs/Intelligent Hubs
- ☐ 07. ☐ Cables, Connectors, Baluns
- ☐ 08. ☐ UPS
- ☐ 09. ☐ Network Adapter Boards/Network Interface Cards
- ☐ 10. ☐ Peer-to-Peer LANs
- ☐ 11. ☐ Wireless Networks
- ☐ 12. ☐ SNMP Network Management
- ☐ 13. ☐ ATM Switches
- ☐ 14. ☐ Remote LAN Access
- ☐ 15. ☐ Ethernet Switches
- ☐ 16. ☐ LAN Servers
- ☐ 17. ☐ Superservers
- ☐ 18. ☐ Remote Access/Communications Servers

A ☐ 101 B ☐ REMOTE/WIRELESS COMPUTING

- ☐ 19. ☐ Laptops
- ☐ 20. ☐ Notebooks
- ☐ 21. ☐ PDAs
- ☐ 22. ☐ PCMCIA
- ☐ 23. ☐ Mobile Data Services
- ☐ 24. ☐ Wireless Data Services
- ☐ 25. ☐ Wireless Data Equipment

A ☐ 102 B ☐ INTERNETWORKING

- ☐ 26. ☐ Bridges
- ☐ 27. ☐ Routers
- ☐ 28. ☐ Gateways
- ☐ 29. ☐ Bridge/Routers

A ☐ 103 B ☐ COMPUTERS/PERIPHERALS

- ☐ 30. ☐ Micros/PCs
- ☐ 31. ☐ Minis
- ☐ 32. ☐ Mainframes
- ☐ 33. ☐ Workstations
- ☐ 34. ☐ Front-End Processors
- ☐ 35. ☐ Terminals
- ☐ 36. ☐ Printers
- ☐ 37. ☐ Cluster Controllers
- ☐ 38. ☐ Fax Machines
- ☐ 39. ☐ Monitors

A ☐ 104 B ☐ SOFTWARE/APPLICATIONS

- ☐ 40. ☐ Network Management
- ☐ 41. ☐ Systems Management
- ☐ 42. ☐ Micro to Mainframe
- ☐ 43. ☐ Security
- ☐ 44. ☐ Communication/Terminal Emulation
- ☐ 45. ☐ Word Processing
- ☐ 46. ☐ Operating Systems
- ☐ 47. ☐ Client Server Applications Development
- ☐ 48. ☐ Applications Development
- ☐ 49. ☐ Data Base Management/RDBMS
- ☐ 50. ☐ Spreadsheet
- ☐ 51. ☐ Groupware
- ☐ 52. ☐ EDI
- ☐ 53. ☐ E-Mail
- ☐ 54. ☐ Windows/Graphical User Interface
- ☐ 55. ☐ 4GL Development/Case
- ☐ 56. ☐ Multimedia
- ☐ 57. ☐ Graphics/DTP

A B SOFTWARE/APPLICATIONS (cont'd)

- ☐ 58. ☐ Remote Access
- ☐ 59. ☐ Imaging
- ☐ 60. ☐ Suites
- ☐ 61. ☐ Middleware
- ☐ 62. ☐ Document Management

A ☐ 105 B ☐ WIDE AREA NETWORKS EQUIPMENT & SERVICES

- ☐ 63. ☐ Modems (9.6K bps and over)
- ☐ 64. ☐ Modems (under 9.6K bps)
- ☐ 65. ☐ T-1/T-3 Multiplexers
- ☐ 66. ☐ T-1/T-3 Services
- ☐ 67. ☐ Inverse Multiplexers
- ☐ 68. ☐ Fractional T-1
- ☐ 69. ☐ SMDS
- ☐ 70. ☐ ATM (Asynchronous Transfer Mode)
- ☐ 71. ☐ Matrix Switches
- ☐ 72. ☐ Packet Switches
- ☐ 73. ☐ Protocol Converters
- ☐ 74. ☐ Diagnostic/Test Equipment
- ☐ 75. ☐ DSU/CSU
- ☐ 76. ☐ Microwave
- ☐ 77. ☐ Fax Boards/Modems
- ☐ 78. ☐ VSAT
- ☐ 79. ☐ Fiber Optic
- ☐ 80. ☐ Satellite
- ☐ 81. ☐ ISDN
- ☐ 82. ☐ PBXs (over 1000 lines)
- ☐ 83. ☐ PBXs (under 1000 lines)
- ☐ 84. ☐ Automatic Call Distributors
- ☐ 85. ☐ Voice Messaging Systems
- ☐ 86. ☐ Videoconferencing/Teleconferencing
- ☐ 87. ☐ Voice Response/Processing
- ☐ 88. ☐ Dedicated Leased Line
- ☐ 89. ☐ Switched Data
- ☐ 90. ☐ E-Mail/Online Services
- ☐ 91. ☐ Image Processing
- ☐ 92. ☐ 800/900 Services
- ☐ 93. ☐ WATS/MTS
- ☐ 94. ☐ International
- ☐ 95. ☐ Virtual Networks
- ☐ 96. ☐ Frame Relay
- ☐ 97. ☐ Value Added Services
- ☐ 98. ☐ CIT (Computer-Integrated Telephony)

- ☐ 99. ☐ None of the above (1-98)

6 What is the total number of LANS, Workstations/Nodes: At this Location/ In your Organization?

At This Location:

	LANs		Workstations/ Nodes
1.	☐	5000+	☐
2.	☐	1,000 - 4,999	☐
3.	☐	100 - 999	☐
4.	☐	50 - 99	☐
5.	☐	10 - 49	☐
6.	☐	9 or less	☐
7.	☐	None of the above	☐

Entire Organization:

	LANs		Workstations/ Nodes
1.	☐	5000+	☐
2.	☐	1,000 - 4,999	☐
3.	☐	100 - 999	☐
4.	☐	50 - 99	☐
5.	☐	10 - 49	☐
6.	☐	9 or less	☐
7	☐	None of the above	☐

7 Check ALL that apply in columns A and B:

A: The following network platforms are currently installed.
B: The following network platforms are currently planned.

A ☐ 55 B ☐ NETWORK ARCHITECTURES

- ☐ 01. ☐ SNA
- ☐ 02. ☐ DECNET
- ☐ 03. ☐ MAP/TOP
- ☐ 04. ☐ TCP/IP
- ☐ 05. ☐ DCA (Unisys)
- ☐ 06. ☐ X.25
- ☐ 07. ☐ Novell IPX/SPX
- ☐ 08. ☐ APPC/APPN/LU6.2
- ☐ 09. ☐ NETBIOS
- ☐ 10. ☐ OSI
- ☐ 11. ☐ APPLETALK
- ☐ 12. ☐ NSF
- ☐ 13. ☐ XNS
- ☐ 14. ☐ OTHER________

A ☐ 56 B ☐ NETWORK OPERATING SYSTEM

- ☐ 15. ☐ LOCALTALK (APPLETALK)
- ☐ 16 ☐ BANYAN (VINES)
- ☐ 17. ☐ DCA (IRMALAN)
- ☐ 18. ☐ DCA (10-NET)
- ☐ 19. ☐ IBM (LAN SERVER)
- ☐ 20. ☐ IBM (PC LAN PROGRAM)
- ☐ 21. ☐ MICROSOFT (LAN MANAGER)
- ☐ 22. ☐ NOVELL (NETWARE, 2X, 3X, 4X)
- ☐ 23. ☐ PROTEON (PRONET)
- ☐ 24. ☐ 3COM (3+, 3+OPEN)
- ☐ 25. ☐ ARTISOFT (LANTASTIC)
- ☐ 26. ☐ HAYES (LANSTEP)
- ☐ 27. ☐ DEC (PATHWORKS)
- ☐ 28. ☐ WINDOWS NT/ADVANCED SERVER
- ☐ 29. ☐ OTHER________

A ☐ 57 B ☐ LAN ENVIRONMENT

- ☐ 30. ☐ 4M TOKEN RING
- ☐ 31. ☐ 16M TOKEN RING
- ☐ 32. ☐ ARCNET
- ☐ 33. ☐ ETHERNET
- ☐ 34. ☐ 100 M ETHERNET
- ☐ 35. ☐ STARLAN
- ☐ 36. ☐ FDDI
- ☐ 37. ☐ LOCAL TALK
- ☐ 38. ☐ 10BASE-T
- ☐ 39. ☐ ATM
- ☐ 40. ☐ OTHER________

A ☐ 58 B ☐ COMPUTER OPERATING SYSTEM

- ☐ 41. ☐ DOS
- ☐ 42. ☐ UNIX/XENIX/AIX
- ☐ 43. ☐ OS/2
- ☐ 44. ☐ OS/2.X
- ☐ 45. ☐ IBM MVS
- ☐ 46. ☐ IBM VM
- ☐ 47. ☐ DIGITAL VMS
- ☐ 48. ☐ MACINTOSH
- ☐ 49. ☐ WINDOWS
- ☐ 50. ☐ WINDOWS NT
- ☐ 51. ☐ X WINDOWS
- ☐ 52. ☐ SOLARIS
- ☐ 53. ☐ OTHER________

- ☐ 54. ☐ None of the above (1-53)

8 For which areas outside of the U.S. do you have purchase influence? (check all that apply)

- 1. ☐ Europe
- 2. ☐ Asia
- 3. ☐ South America
- 4. ☐ Australia
- 5. ☐ Middle East
- 6. ☐ None

9 Which of the following hardware platforms are installed/planned in your company? (check all that apply)

	Mainframes		Minis	
	Installed	Planned	Installed	Planned
01. IBM	☐	☐	☐	☐
02. DIGITAL	☐	☐	☐	☐
03. AMDAHL	☐	☐	☐	☐
04. AT&T	☐	☐	☐	☐
05. BULL HNIS	☐	☐	☐	☐
06. DATA GENERAL	☐	☐	☐	☐
07. HP	☐	☐	☐	☐
08. TANDEM	☐	☐	☐	☐
09. UNISYS	☐	☐	☐	☐
10. OTHER________	☐	☐	☐	☐

Which of the following do you have Installed/planned:
(USE NUMBERS ONLY)

	At This Location		Entire Organization	
	Servers	Clients/ Nodes	Servers	Clients/ Nodes
11. POWER MACINTOSH				
12. MACINTOSH OTHER				
13. POWER PC BASED				
14. PENTIUM BASED				
15. 80486 BASED				
16. 80386 BASED				
17. 80286 BASED				
18. 80806/80808 BASED				
19. ALPHA BASED				
20. RISC/UNIX BASED WORKSTATIONS				
21. OTHER				

10 What is the estimated value of networking equipment and services that you help specify, recommend or approve annually? (check one only)

- 01. ☐ $100 million and over
- 02. ☐ $50 - $99.9 million
- 03. ☐ $25 - $49.9 million
- 04. ☐ $20 - $24.9 million
- 05. ☐ $10 - $19.9 million
- 06. ☐ $5 - $9.9 million
- 07. ☐ $1 - $4.9 million
- 08. ☐ $500,000 - $999,999
- 09. ☐ $499,999 or less
- 10. ☐ None of the above

11 Estimated gross annual revenues of your entire company/institution: (check one only)

- 1. ☐ Over $10 billion
- 2. ☐ $1 to $9.9 billion
- 3. ☐ $500 to $999.9 million
- 4. ☐ $100 to $499.9 million
- 5. ☐ $50 to $99.9 million
- 6. ☐ $10 to $49.9 million
- 7. ☐ $5 to $9.9 million
- 8. ☐ $4.9 million or less
- 9. ☐ None of the above

12 Estimated number of employees: At This Location/In Entire Organization

At This Location:

- 1. ☐ Over 10,000
- 2. ☐ 5,000 - 9,999
- 3. ☐ 2,500 - 4,999
- 4. ☐ 1,000 - 2,499
- 5. ☐ 500 - 999
- 6. ☐ 499 or less

Entire Organization:

- 1. ☐ Over 10,000
- 2. ☐ 5,000 - 9,999
- 3. ☐ 2,500 - 4,999
- 4. ☐ 1,000 - 2,499
- 5. ☐ 500 - 999
- 6. ☐ 499 or less

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If government, please specify division: ________________

1 Industry: (check one only)

01. ☐ Manufacturers (other)
02. ☐ Finance/Banking
03. ☐ Insurance/Real Estate/Legal
04. ☐ Healthcare Services
05. ☐ Hospitality/Entertainment/Recreation
06. ☐ Media/TV/Cable/Radio/Print
07. ☐ Retail/Wholesale Trade/Business Services
08. ☐ Transportation
09. ☐ Utilities
10. ☐ Education
11. ☐ Process Industries (Mining/Construction/Petroleum Refining/Agriculture/Forestry)
12. ☐ Government Federal/State/Local
13. ☐ Military
14. ☐ Aerospace
15. ☐ Consultants (Independent)
16. ☐ Carriers/Interconnects
17. ☐ Manufacturers (Computer/Communications)
18. ☐ Systems/Network Integrators (VAR/VAD/VAN/Systems/Software Houses)
19. ☐ Distributors Communications/Computers
20. ☐ Other________________

2 What is your Job Function? (check one only)

NETWORK IS Management:

1. ☐ Networking Management
2. ☐ LAN Management
3. ☐ Datacom/Telecom Management
4. ☐ IS,IT,MIS,Systems Management
5. ☐ Engineering Management
6. ☐ Corporate Management (CIO,CEO,PRES,VP, DIR,MGR,Financial Management)
7. ☐ Consultant (Independent)
8. ☐ Other________________

3 What is the total number of sites for which you have purchase influence? (check one only)

1. ☐ 100+
2. ☐ 50 - 99
3. ☐ 20 - 49
4. ☐ 10 - 19
5. ☐ 2 - 9
6. ☐ 1
7. ☐ None

4 What is your scope and involvement in purchasing decisions for network products & services for your enterprise?

A. SCOPE (check one only)	**B. INVOLVEMENT** (check all that apply)
1. ☐ Corporatewide	1. ☐ Recommend/Specify
2. ☐ Multienterprise	2. ☐ Approve
3. ☐ Departmental	3. ☐ Evaluate
4. ☐ None	4. ☐ Determine the need
	5. ☐ None

5 Check ALL that apply in columns A and B:

A: I am involved in the purchase of the following products/services.
B: I plan to purchase the following products/services.

A ☐ 100 B ☐ **LOCAL AREA NETWORKS**
☐ 01. ☐ Local Area Networks
☐ 02. ☐ Network Operating Systems Software (NOS)
☐ 03. ☐ LAN Storage Devices (optical, tape, disk, etc.)
☐ 04. ☐ LAN Backup Systems (optical, tape, disk, etc.)
☐ 05. ☐ Network Test Equipment/Diagnostic/Management Software
☐ 06. ☐ Hubs/Intelligent Hubs
☐ 07. ☐ Cables, Connectors, Baluns
☐ 08. ☐ UPS
☐ 09. ☐ Network Adapter Boards/Network Interface Cards
☐ 10. ☐ Peer-to-Peer LANs
☐ 11. ☐ Wireless Networks
☐ 12. ☐ SNMP Network Management
☐ 13. ☐ ATM Switches
☐ 14. ☐ Remote LAN Access
☐ 15. ☐ Ethernet Switches
☐ 16. ☐ LAN Servers
☐ 17. ☐ Superservers
☐ 18. ☐ Remote Access/Communications Servers

A ☐ 101 B ☐ **REMOTE/WIRELESS COMPUTING**
☐ 19. ☐ Laptops
☐ 20. ☐ Notebooks
☐ 21. ☐ PDAs
☐ 22. ☐ PCMCIA
☐ 23. ☐ Mobile Data Services
☐ 24. ☐ Wireless Data Services
☐ 25. ☐ Wireless Data Equipment

A ☐ 102 B ☐ **INTERNETWORKING**
☐ 26. ☐ Bridges
☐ 27. ☐ Routers
☐ 28. ☐ Gateways
☐ 29. ☐ Bridge/Routers

A ☐ 103 B ☐ **COMPUTERS/PERIPHERALS**
☐ 30. ☐ Micros/PCs
☐ 31. ☐ Minis
☐ 32. ☐ Mainframes
☐ 33. ☐ Workstations
☐ 34. ☐ Front-End Processors
☐ 35. ☐ Terminals
☐ 36. ☐ Printers
☐ 37. ☐ Cluster Controllers
☐ 38. ☐ Fax Machines
☐ 39. ☐ Monitors

A ☐ 104 B ☐ **SOFTWARE/APPLICATIONS**
☐ 40. ☐ Network Management
☐ 41. ☐ Systems Management
☐ 42. ☐ Micro to Mainframe
☐ 43. ☐ Security
☐ 44. ☐ Communication/Terminal Emulation
☐ 45. ☐ Word Processing
☐ 46. ☐ Operating Systems
☐ 47. ☐ Client Server Applications Development
☐ 48. ☐ Applications Development
☐ 49. ☐ Data Base Management/RDBMS
☐ 50. ☐ Spreadsheet
☐ 51. ☐ Groupware
☐ 52. ☐ EDI
☐ 53. ☐ E-Mail
☐ 54. ☐ Windows/Graphical User Interface
☐ 55. ☐ 4GL Development/Case
☐ 56. ☐ Multimedia
☐ 57. ☐ Graphics/DTP

A B **SOFTWARE/APPLICATIONS (cont'd)**
☐ 58. ☐ Remote Access
☐ 59. ☐ Imaging
☐ 60. ☐ Suites
☐ 61. ☐ Middleware
☐ 62. ☐ Document Management

A ☐ 105 B ☐ **WIDE AREA NETWORKS EQUIPMENT & SERVICES**
☐ 63. ☐ Modems (9.6K bps and over)
☐ 64. ☐ Modems (under 9.6K bps)
☐ 65. ☐ T-1/T-3 Multiplexers
☐ 66. ☐ T-1/T-3 Services
☐ 67. ☐ Inverse Multiplexers
☐ 68. ☐ Fractional T-1
☐ 69. ☐ SMDS
☐ 70. ☐ ATM (Asynchronous Transfer Mode)
☐ 71. ☐ Matrix Switches
☐ 72. ☐ Packet Switches
☐ 73. ☐ Protocol Converters
☐ 74. ☐ Diagnostic/Test Equipment
☐ 75. ☐ DSU/CSU
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☐ 81. ☐ ISDN
☐ 82. ☐ PBXs (over 1000 lines)
☐ 83. ☐ PBXs (under 1000 lines)
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☐ 86. ☐ Videoconferencing/Teleconferencing
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☐ 89. ☐ Switched Data
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☐ 91. ☐ Image Processing
☐ 92. ☐ 800/900 Services
☐ 93. ☐ WATS/MTS
☐ 94. ☐ International
☐ 95. ☐ Virtual Networks
☐ 96. ☐ Frame Relay
☐ 97. ☐ Value Added Services
☐ 98. ☐ CIT (Computer-Integrated Telephony)

☐ 99. ☐ None of the above (1-98)

6 What is the total number of LANS, Workstations/Nodes: At this Location/ In your Organization?

At This Location:

	LANs		Workstations/ Nodes
1.	☐	5000+	☐
2.	☐	1,000 - 4,999	☐
3.	☐	100 - 999	☐
4.	☐	50 - 99	☐
5.	☐	10 - 49	☐
6.	☐	9 or less	☐
7.	☐	None of the above	☐

Entire Organization:

	LANs		Workstations/ Nodes
1.	☐	5000+	☐
2.	☐	1,000 - 4,999	☐
3.	☐	100 - 999	☐
4.	☐	50 - 99	☐
5.	☐	10 - 49	☐
6.	☐	9 or less	☐
7.	☐	None of the above	☐

7 Check ALL that apply in columns A and B:

A: The following network platforms are currently installed.
B: The following network platforms are currently planned.

A ☐ 55 B ☐ **NETWORK ARCHITECTURES**
☐ 01. ☐ SNA
☐ 02. ☐ DECNET
☐ 03. ☐ MAP/TOP
☐ 04. ☐ TCP/IP
☐ 05. ☐ DCA (Unisys)
☐ 06. ☐ X.25
☐ 07. ☐ Novell IPX/SPX
☐ 08. ☐ APPC/APPN/LU6.2
☐ 09. ☐ NETBIOS
☐ 10. ☐ OSI
☐ 11. ☐ APPLETALK
☐ 12. ☐ NSF
☐ 13. ☐ XNS
☐ 14. ☐ OTHER________________

A ☐ 56 B ☐ **NETWORK OPERATING SYSTEM**
☐ 15. ☐ LOCALTALK (APPLETALK)
☐ 16 ☐ BANYAN (VINES)
☐ 17. ☐ DCA (IRMALAN)
☐ 18. ☐ DCA (10-NET)
☐ 19. ☐ IBM (LAN SERVER)
☐ 20. ☐ IBM (PC LAN PROGRAM)
☐ 21. ☐ MICROSOFT (LAN MANAGER)
☐ 22. ☐ NOVELL (NETWARE, 2X, 3X, 4X)
☐ 23. ☐ PROTEON (PRONET)
☐ 24. ☐ 3COM (3+, 3+OPEN)
☐ 25. ☐ ARTISOFT (LANTASTIC)
☐ 26. ☐ HAYES (LANSTEP)
☐ 27. ☐ DEC (PATHWORKS)
☐ 28. ☐ WINDOWS NT/ADVANCED SERVER
☐ 29. ☐ OTHER________________

A ☐ 57 B ☐ **LAN ENVIRONMENT**
☐ 30. ☐ 4M TOKEN RING
☐ 31. ☐ 16M TOKEN RING
☐ 32. ☐ ARCNET
☐ 33. ☐ ETHERNET
☐ 34. ☐ 100 M ETHERNET
☐ 35. ☐ STARLAN
☐ 36. ☐ FDDI
☐ 37. ☐ LOCAL TALK
☐ 38. ☐ 10BASE-T
☐ 39. ☐ ATM
☐ 40. ☐ OTHER________________

A ☐ 58 B ☐ **COMPUTER OPERATING SYSTEM**
☐ 41. ☐ DOS
☐ 42. ☐ UNIX/XENIX/AIX
☐ 43. ☐ OS/2
☐ 44. ☐ OS/2.X
☐ 45. ☐ IBM MVS
☐ 46. ☐ IBM VM
☐ 47. ☐ DIGITAL VMS
☐ 48. ☐ MACINTOSH
☐ 49. ☐ WINDOWS
☐ 50. ☐ WINDOWS NT
☐ 51. ☐ X WINDOWS
☐ 52. ☐ SOLARIS
☐ 53. ☐ OTHER________________

☐ 54. ☐ None of the above (1-53)

8 For which areas outside of the U.S. do you have purchase influence? (check all that apply)

1. ☐ Europe
2. ☐ Asia
3. ☐ South America
4. ☐ Australia
5. ☐ Middle East
6. ☐ None

9 Which of the following hardware platforms are installed/planned in your company? (check all that apply)

	Mainframes		Minis	
	Installed	Planned	Installed	Planned
01. IBM	☐	☐	☐	☐
02. DIGITAL	☐	☐	☐	☐
03. AMDAHL	☐	☐	☐	☐
04. AT&T	☐	☐	☐	☐
05. BULL HNIS	☐	☐	☐	☐
06. DATA GENERAL	☐	☐	☐	☐
07. HP	☐	☐	☐	☐
08. TANDEM	☐	☐	☐	☐
09. UNISYS	☐	☐	☐	☐
10. OTHER________	☐	☐	☐	☐

Which of the following do you have installed/planned:
(USE NUMBERS ONLY)

	At This Location		Entire Organization	
	Servers	Clients/ Nodes	Servers	Clients/ Nodes
11. POWER MACINTOSH				
12. MACINTOSH OTHER				
13. POWER PC BASED				
14. PENTIUM BASED				
15. 80486 BASED				
16. 80386 BASED				
17. 80286 BASED				
18. 80806/80808 BASED				
19. ALPHA BASED				
20. RISC/UNIX BASED WORKSTATIONS				
21. OTHER				

10 What is the estimated value of networking equipment and services that you help specify, recommend or approve annually? (check one only)

01. ☐ $100 million and over
02. ☐ $50 - $99.9 million
03. ☐ $25 - $49.9 million
04. ☐ $20 - $24.9 million
05. ☐ $10 - $19.9 million
06. ☐ $5 - $9.9 million
07. ☐ $1 - $4.9 million
08. ☐ $500,000 - $999,999
09. ☐ $499,999 or less
10. ☐ None of the above

11 Estimated gross annual revenues of your entire company/institution: (check one only)

1. ☐ Over $10 billion
2. ☐ $1 to $9.9 billion
3. ☐ $500 to $999.9 million
4. ☐ $100 to $499.9 million
5. ☐ $50 to $99.9 million
6. ☐ $10 to $49.9 million
7. ☐ $5 to $9.9 million
8. ☐ $4.9 million or less
9. ☐ None of the above

12 Estimated number of employees: At This Location/In Entire Organization

At This Location:	**Entire Organization:**
1. ☐ Over 10,000	1. ☐ Over 10,000
2. ☐ 5,000 - 9,999	2. ☐ 5,000 - 9,999
3. ☐ 2,500 - 4,999	3. ☐ 2,500 - 4,999
4. ☐ 1,000 - 2,499	4. ☐ 1,000 - 2,499
5. ☐ 500 - 999	5. ☐ 500 - 999
6. ☐ 499 or less	6. ☐ 499 or less